It Has Been a Grand Season

CONSIDERABLE space is given up in this issue of MoToR BoatinG to the racing events of the past month. We wish we could devote even more pages to this sport for they could be used to tell the stories of the many events in different parts of the country during July and August. It has been a great racing season not only on the Mississippi, at Chicago, Buffalo, Detroit and Toronto but everywhere. The east has had its share of racing and cruising events although perhaps not so spectacular as those in other parts of the country. On Long Island Sound, the Delaware, the Chesapeake and in fact on all navigable waters nearly every boat which will float has been in commission and in use.

The cruise of the Delaware River Yachtsmen's League to the Chesapeake was a grand success and is a form of boating activity which gives real enjoyment to an even greater number of people than perhaps racing does.

In the racing of speed craft, of course, the victory of Miss America II over the English boat Maple Leaf VII is of the greatest importance. Then Miss America II established a new world's record of 80.567 miles per hour in her official mile trials which is going faster than anything has travelled on the water before.

It is interesting to note how speeds have increased since the first official mile trials were held in 1914. There has been an increase each year. In 1914 Baby Speed Demon averaged 51.726 miles per hour on Lake George, the next year Tech Jr. made 53.7 and in 1916 Miss Minneapolis showed 61.083, Miss Detroit II in 1917 boosted the mark to 61.724 and the Wippo'-Will, Jr. came along in 1918 and showed a speed of 63.498. No trials were held in 1919 but in 1920 Miss America I knocked out all records by making 6 one-mile dashes at a speed of 76.655 miles per hour. Thus we have an increase of 28.841 miles per hour or 56%

The records of the runabouts should not be forgotten either. Baby Gar with one Smith motor showed 46.5 miles per hour as her best speed, Nick Nack with a Hall-Scott motor 42.15 miles per hour in a race and Rainbow at Buffalo in the mile trials 44.028 miles per hour with one Sterling motor.

In the November issue of MoToR BoatinG we will have a number of illustrations and a description of Kex II. This is the boat, as many of our readers will remember, which was a 38-footer a year or so ago and was lengthened out by her owner, Frank P. Huckins, of Boston, so that this year her overall length measures 60 feet. Kex II is one of the most wonderful boats that has ever floated. Speed is of the least consideration although she can log an honest nine knots. Captain Huckins' real reason for living, expressed in his own words, is as follows:

"Now as I sit in our cheery cabin, pecking at my Peruna typewriter while friend wife inspires me with saxophone stuff on the Victrola, I reflect on the many yachtsmen who have deserted the water for the motor car, for it is true that there are few yachts on the coast as compared with the days of yore and I say to you, come back to the sea, away from the dust, the noise, the tearing along crowded roads. Come back to clean sportsmanship and the good friendships of life afloat. It is the nearest to heaven on this earth."

Commodore P. C. Jones of Toledo was welcomed at the Detroit races by his host of friends. It was the Commodore's first appearance at a race meet since the war

MOTOR BOATING

119 West 40th Street
New York

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for OCTOBER *1921*

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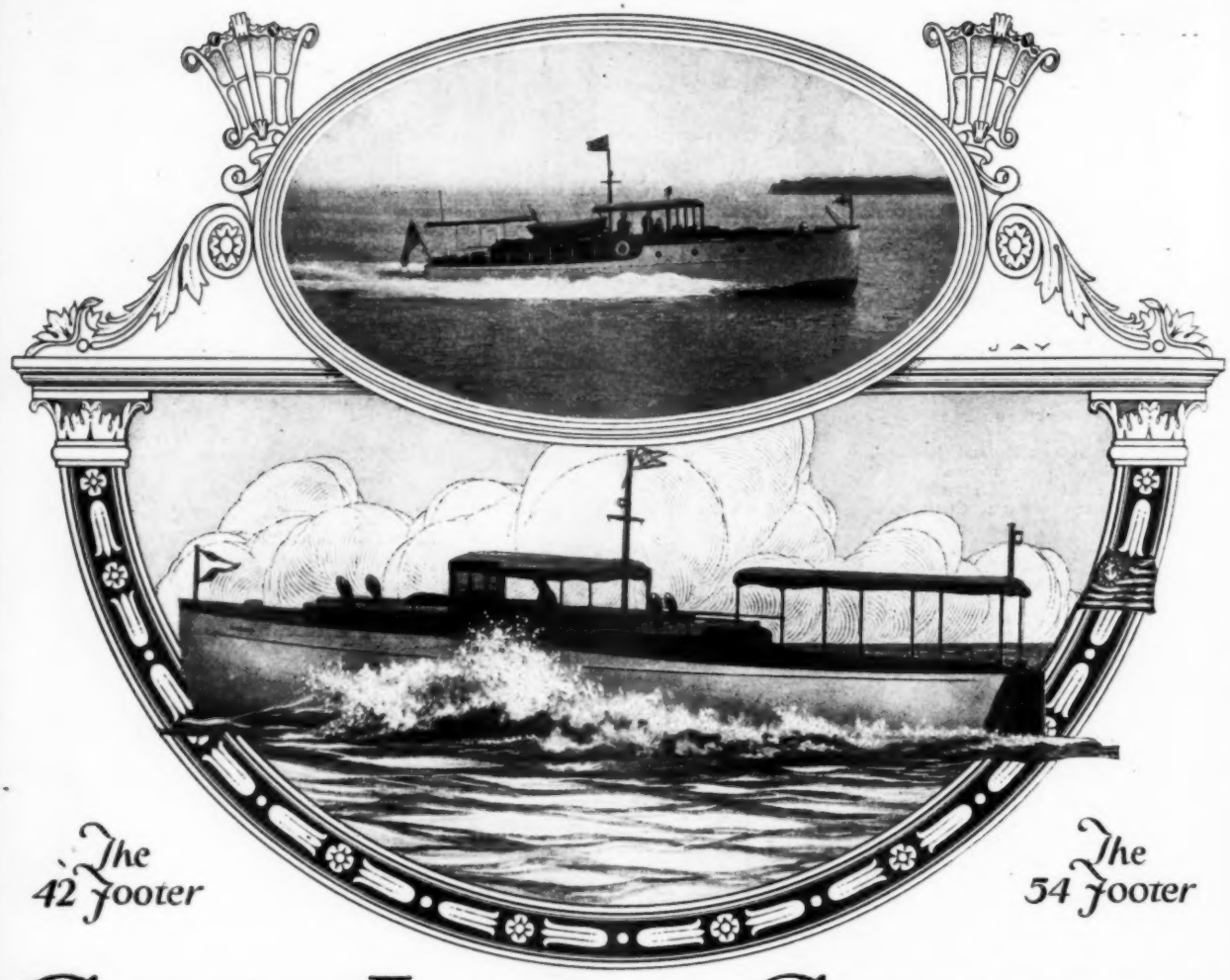

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The 54 Footer

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Advertising Index will be found on page 110

MOTOR BOATING

Photographs by Rosenfeld & Levick

Miss America II, showing the installation of the four twelve-cylinder Twin-six Smith Marine motors. The shafts of the four motors led forward to two gear boxes which drove the two propeller shafts. Two motors were geared to each propeller shaft, but not connected in tandem, as has always been the practice heretofore

George Wood, who was at the helm of Miss America I

Gar Wood, owner and driver of the winning boat, Miss America II, and the one man directly responsible for all three American boats

The Woods and Smiths Keep the British International Trophy in the United States

American Supremacy in the Motor Boat Racing Field More Forcibly Demonstrated Than Ever Before—Miss America II Shows Herself to Be the Fastest and Most Reliable Boat in the World—Over Eighty Miles an Hour Made in the Official Mile Trials.

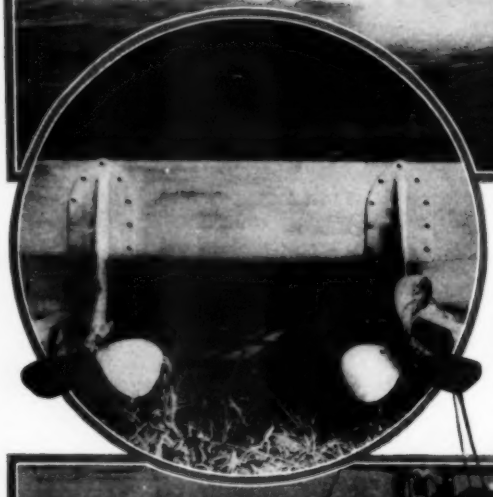
By Charles F. Chapman

See Summary of Results Page 72

As an out and out sporting event this year's race at Detroit for the British International Trophy can hardly be rated as the success which was anticipated. Yet, on account of the sportsmanship of those representing both the challenging country, Great Britain and the motor boatmen of that great boating city of Detroit, Mich., who were the defenders, the ties which have bound together the two greatest maritime nations of the world for years were drawn even closer. The Britishers came a long way to race us. Theirs was not even a fair fighting chance for victory and they must have known it for months. However, after issuing a challenge they were game to the very end and would not give up or withdraw even though their chances for victory were negligible. Not until their boat sank beneath them after one grand spurt for leadership did their efforts cease to make the possible out of the impossible. Even then their sportsmanship continued and their praises of the American boats, crews and American people did much to make American victory more appreciated and the occasion of greater international importance.

The Americans, and by that we mean every last boating enthusiast in Detroit, be he boat owner, club member or merely one of the thousands of spectators who lined the

Miss America II under way at a speed of about 80 miles an hour



Stern view of Miss America II

Canada and every part of this country can be called a success.

In view of the friendly spirit which was everywhere apparent it is hard to tell the real story of the race and the events leading up to them. Sufficient it is to mention that the English boat, Maple Leaf VII owned by Sir Mackay Edgar of London, who has several times before challenged and won this trophy representing the highest honor there is in the motor boat world, with his earlier craft was so far outclassed and surpassed in every last detail by the American team of three boats that it is hard to believe that anything but the real sportsmanship of her

Miss America II in the air, being hoisted from the water to her cradle

course for miles and miles hoping for a real contest, did everything humanly possible to make the Englishmen's visit to this country a success and a pleasure. The greatest shops in Detroit were thrown wide open and every facility offered to the visitors for perfecting their race boat, its power plant or accessories. All technical rules were waived by the American team which required that the challenging boat and all parts thereof must be designed and manufactured in the country represented. A two-day postponement of the first heat was allowed when it was found only a few hours before the start that the challenger would not be able to do her best if the race was run at the time originally set. The American owners even went further than that and offered to delay the start for weeks if necessary or if desired by the challengers. After the accident to Maple Leaf VII which prevented her from finishing the first heat and according to the rules automatically barred her from further racing thus making America the winner of the race, the true sportsmanship of our own owners and committee men was responsible for again offering the crew of the disabled boat the privilege of making necessary repairs to compete in another heat and thus have another chance to win the trophy at a time convenient to themselves. But the Englishmen saw the hopelessness of further effort and were the first to congratulate the victor and acclaimed with the greatest enthusiasm the superiority of American boats, American power plants and greatest of all, the American motor boat racing man. Therefore, the races which brought together the finest of men, and there are no finer living, from abroad as well as from

A deck view of Maple Leaf VII, showing the installation of the four 500 horsepower Sunbeam motors

Maple Leaf VII under way on her trial trip. The best speed which she showed at Detroit for a complete lap in the trial trip was about 56 miles an hour. In the race the one lap which she completed before sinking did not equal this speed

Col. Tate, who drove Maple Leaf VII, and whose sportsmanship was admired by everyone

and greatest sport the world has ever known. But as Sir Mackay Edgar was the only one in the entire British Empire to bring forth a challenger which might be a credit to his native land so Gar Wood was the only American citizen who did likewise for his nation. Two of the American boats were directly his and the third, Miss Chicago, he was indirectly responsible for.

Gar Wood, himself, drove Miss

(*Cont. on p. 52*)

Phil Wood, whose driving of Miss Chicago was responsible for this boat finishing in second place

owner and his desire to come through and not disappoint after once challenging permitted such a craft to be sent across the ocean and such an enormous sum of money to have been spent on venture which it was apparent from the very beginning could but fail.

It is true that reports have it from sources which we can not doubt that Maple Leaf VII was credited with a speed of 87 miles an hour on the other side before being shipped across but expert opinion has it that this speed must have been made in a spurt on a course of much less than a mile in length. Unless the water on the other side of the ocean is much less hard than we know it is here we feel certain that no hull of the Maple Leaf type would have withstood that speed with the same power plant we saw in her at Detroit.

The American side of the argument also had considerable pathos attached to it as viewed from a broad and patriotic standpoint. We use that term with no idea of belittling the efforts of that gallant American sportsman, Gar Wood, who is alone responsible for the fine showing of the American team and who stands without an equal in the annals of motor boat racing history and whose records to date will always stand as a monument to his efforts to make motor boating racing the cleanest

The start of the race for the British International Trophy on September 5. Maple Leaf VII leading, followed by Miss America II and Miss Chicago

Such Things As Waterspouts

Hippocampus, En Route for the Pacific, Finds the West Indian Brand of Weather Interesting — Bayamos Break the Tedium of Calm-Bound Days

By Alfred F. Loomis

Full and bye, everything drawing, and the lee rail awash

MONTHS ago when the cruise of the yawl Hippocampus was no more than an unrelated idea I resolved to prepare myself for foreign lands by the assimilation of Spanish. With characteristic application I devoted a day or two to the mastery of such words as *agua, leche,* and the Spanish equivalents of other vital necessities, little realizing that to get along in Latin America one need know only the words *Frios cervezas,* and *dos mas.* Being so ignorant of the Arcadian simplicity of life in Cuba, I struggled manfully with the language en route thereto, never succeeding, however, in surmounting the bristly barrier comprised by *Habla Vd. Español?*

Try as I would, I couldn't pronounce *Vd.* Nor, after several weeks in Cuban waters, have I heard anyone else pronounce it. One hears *Usted* frequently, which I thought at first was a surname as commonplace as Smith, but never the angular contraction. So I am forced to believe that the abbreviation is designed solely to discourage foreigners from learning the language.

Reacting from this discouragement I declined absolutely to learn Cuban customs, and am now in a position to inform other yachtsmen that by assuming an unsophisticated mien they may enter and leave the little Republic without paying a single bribe. Health bills for a yacht as small as Hippocampus are as free as air, and these, obtainable from the local port officer, are the only requisite clearance papers.

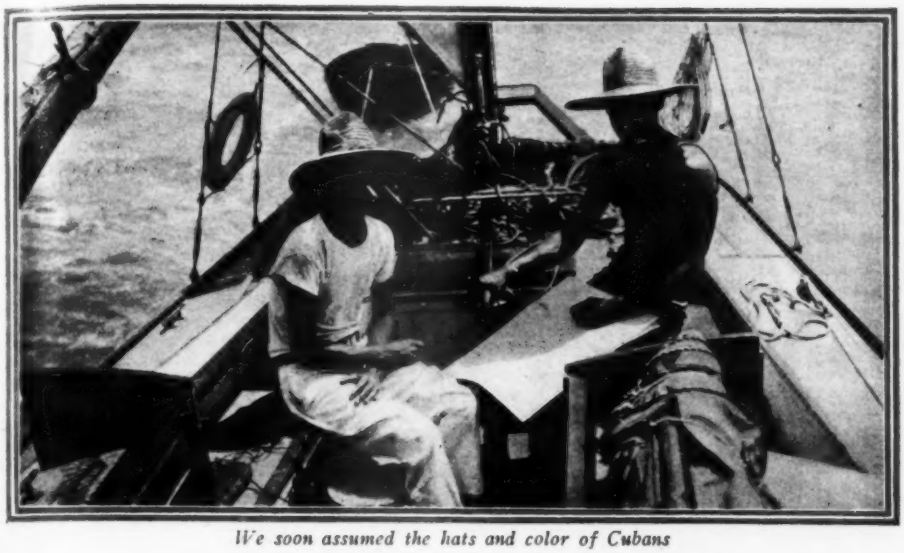
On our way to pick up the documents, we weighed anchor in Havana Harbor, waved good-bye to two American motor boats whose owners had cruised over from Florida for a holiday, and stood out toward Morro Castle. For two reasons we were interested in these Americans—first, because they had the hardihood to cross the Gulf Stream in motor boats of less than 25-foot length, and second, because of their evident unfamiliarity with long distance cruising. They seemed typical of a class of American motor boatmen who will go anywhere (and get back), knowing little and caring less for charts and other government publications.

Their ignorance, if such it was, was revealed by their telling us enthusiastically of a fine "map" of West Indian waters that could be obtained free of charge at the American Consulate.

"It shows all the islands," they confided, "and the principal harbors, and little arrows tell which way the wind blows and how the currents flow for the month of July. You'll make a mistake if you try to navigate down here without one."

Among our many mistakes this one was not included. We had long since provided ourselves with the July Pilot Chart for Central American waters, and when, a month previously, we had decided to omit the Bahamas from our itinerary, we had let our new plans be determined by the current information of this chart. From it we learned that a current running counter to the Gulf Stream would assist us along the northern coast of Cuba to Cape San Antonio and that another counter current, flowing westward along the south shore, would speed us nearly to Jamaica.

But in the days following our clearance from Havana we found that it is one thing for a government to print



We soon assumed the hats and color of Cubans

current arrows on a chart and quite another to expect the currents to conform to the direction of the arrows. Hence, in the flat calm of the first night out, we drifted ten miles back along our course, and hence, in the ensuing doldrums south of the Isle of Pines, we were never able to assume a dead reckoning position that bore any close relation to our actual position. We have since been told that the minor currents of the Caribbean shift like the sands of the desert and that only the main streams are constant in their direction and intensity. These, worse luck, are all against the southwardbound traveler, whether he go eastward or westward of Cuba.

The first afternoon along the Cuban shore was a tonic that pulled us up from the sub-normal induced by our many days of beating down the Floridian coast. We skirted close to the beach, hunting that elusive counter current, and the soft wind blew from the land, sweet with the fragrance of tropical vegetation. From mid-day on the mainsail shaded us from the rays of the westering sun and we all, helmsman included, dozed on deck or watched with supreme contentment the unfolding panorama of the shore. The busy log revolved unheeded, for we were informed of our position by the tall gray chimneys of the Centrales, where the Cuban sugar cane is refined for the market, and by the mountain ranges that soon appeared through the haze to westward.

Even the calm of that night was enjoyable, although each minute reduced our easting and helped restrict our twenty-four-hour total to only forty miles made good. In the morning when the breeze followed the sun over the eastern horizon we headed in high spirits toward the harbor of Bahia Honda, there to stop for a few hours and see Cuba as it really is, divested of the cosmopolitanism of Havana. Guided by information contained in the Coast Pilot and by the color of the water, we stood in past a point dominated by a romantic, disused castle, and sailed down a line of buoys arranged uniformly with the United States system.

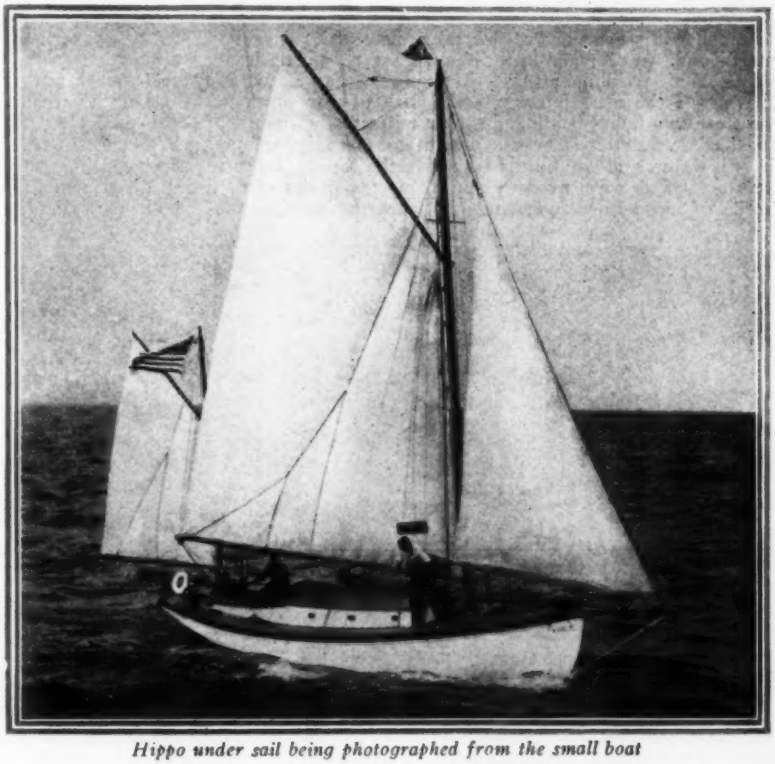
Before us and on either side as we drew close to the head of the bay arose clusters of peaks which might have been thrown there by the hand of an unpracticed Creator, so jagged and precipitous and irregular did they appear. But in the foreground the foothills were orderly enough, and I was quick to compare certain features of them with the Connecticut Berkshires.

"Yes," drawled Squibb, taking in the landscape through his captured German field-glasses, "you'd say you were in Connecticut if it weren't for the royal palms silhouetted above their summits, or for the thatch-roofed cottage in the middle of that cane field."

I withdrew my comparison and pulled vindictively at the fishline which Squibb had trailed over our counter a few minutes previously. To my surprise it resisted my pull. In great excitement I handed the line to Squibb and with great precision he hauled it in, watching the glint of sunlight on silver scales. No science there, with a meal at stake. The hooked fish came in like nothing more nor less than five pounds of dinner, and in ten seconds he was flapping in the cockpit.

There he stayed while, under reduced sail, we sounded our way beyond the innermost buoy. Then, when we had come to anchor in less than two fathoms off a building euphemistically termed a warehouse by the Hydrographic Office literati, the first business of the noon hour was to clean the fish and fry him in cracker crumbs. Joe Chambers once had an experience with lobster which destroyed for him the palatability of all sea foods, but he actually likes to skin, clean, and cook fish. I like to watch him, and it is my chief regret of this cruise that I haven't done so oftener.

We have trolled over likely-looking reefs, fished when becalmed, and attempted to scoop up minnows in the can-



Hippo under sail being photographed from the small boat

vas deck bucket, but luck doesn't favor our enterprise. Once a fish bit Joe Squibb's big toe (or so he says) when he was dangling his feet over the side, and often when becalmed we have seen zebra fish—to give them a descriptive name—playing in the shadow of our hull. Once also a shark fished for me, as may be mentioned presently, but only at Bahia Honda have we come to culinary conclusions with the aquatic tribe.

The two Joes, looking as if they were waiting for sharks, becalmed as usual

Lunch over, we put on a few clothes, landed in the dink, and walked a country road between rows of mango trees for a matter of a mile to the village of Bahia Honda. It is not metropolitan, nor fashionable, nor wildly exciting, but it satisfied our desire for a glimpse of rural Cuban life. From within a wooden barracks over which floated the lone star of the Republic sounded the click of typewriter keys, and from a house fronting the grass-grown central square came the tortured lament of a tuneless piano. These were the only village noises, as even the dogs were taking their afternoon siesta.

Turkey buzzards wheeled over the weather-beaten square tower of the village church, or sat awkwardly on its balcony, and a military horse, tethered in the shade of a picket house, pawed the ground absent-mindedly. Other activity was notably lacking, except in the local department store where a family of Chinamen sold everything from wine to straw hats, and where the two Joes drank their *Frios cervezas.* Disliking beer, I had my refreshment from a keg of *Vino blanco,* and hoped devoutly as I drank from a dirty glass that germs were as dormant as the rest of Bahia Honda.

Laden with sugar and a few other necessities forgotten at Havana, we returned to the ship and were shortly under way. With gasoline at sixty-five cents a gallon we are sparing of the use of power and lavish of our time, and we were two hours beating the four miles to the mouth of the harbor. Yet it is ever a delight to sail Hippocampus in still water, and we did not begrudge the time. Darkness overtook us as we neared the entrance—the darkness of a horde of mosquitoes swarming out from the nearby mangroves. And when by the use of citronella we had cleared the atmosphere, the flashing light of Gobernadora Point reminded us that we had ended another day.

On the one following we were becalmed off an island known as Jutias Cay, from whose lighthouse I was able to check the accuracy of a sight taken for longitude. Nothing worthy of comment happened until early in the evening, when the easterly wind having again arisen, picking up a rolling sea with it, our towing dink overtook us and stove a small hole in her bow. Then, as we should have done before, we hauled the dink aboard and lashed it athwartships across the cockpit, and not since have we towed it in a following sea.

Another day saw us still to eastward of Cape San Antonio, but early the next morning we rounded it and entered on a new phase of cruising life. From Bahia Honda to the western end of Cuba we had skirted a coast which although bounded by a barrier reef of coral extending several miles from shore, is at least partially lighted. Up to Jutias Cay we had kept fairly well inshore, drawn by the wild beauty of the high mountains of the Sierra Acostas. We had sighted an occasional passing ship or glimpsed native fishing craft threading the shoal waterways behind the barrier reef, and so we had felt somewhat in touch both with nature and with humanity. But now for a hundred miles to the Isle of Pines we were to be isolated from ship and shore, and again from there to Cienfuegos equally destitute of companionship.

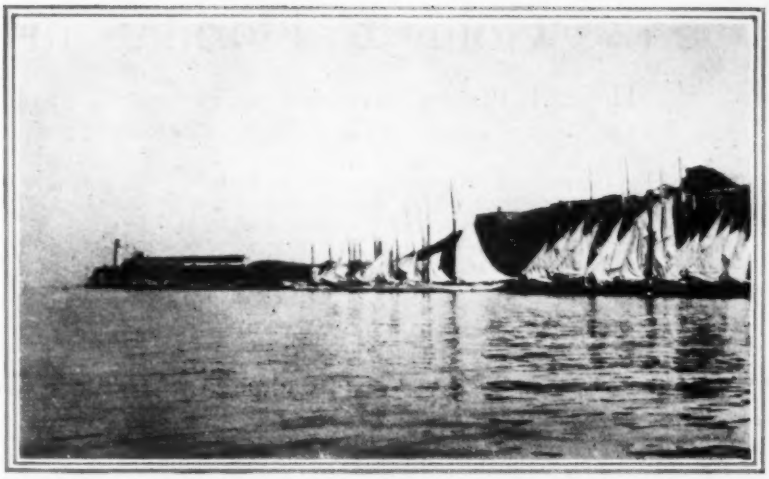
Cuban passenger boat with American boats in background. Machinas dock, Havana

Moreover, the wind which had been for us was now against us, and the squalls that had dissipated themselves in the mountains were now to dash upon us. As we rounded Antonio and headed up into rollers which had come all the way from Haiti to greet us we realized that we could say good-bye to idyllic cruising. Yet, as we were to learn later, we were particularly favored by fortune in making the Isle of Pines within two days of rounding the cape. All told, we were becalmed only ten and a half hours, and in the forty-eight met only two arched squalls and one bayamo.

An arched squall, which ap-

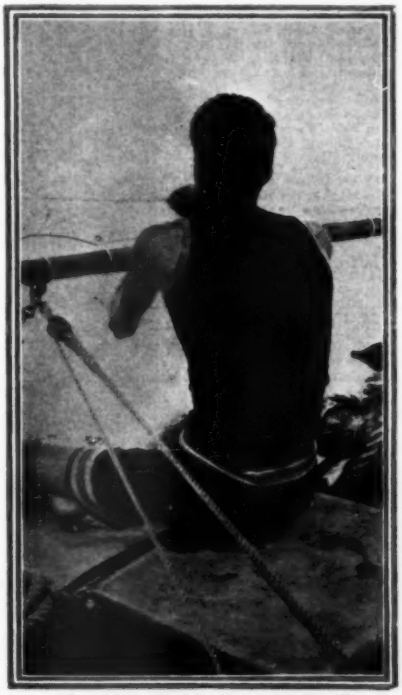
pears to be native to Caribbean waters, is recognizable by a heavy black line of low cumulus clouds which, coming up or down the wind, brings a puff of great intensity, or a tropical shower of rain, or both. It usually sucks all the wind out of the sky and is followed by an indeterminate period of absolute calm. A bayamo, more or less indigenous to the south shore of Cuba, is more terrific in appearance and in our experience more freighted with trouble. It may strike at any hour of the day, but appears to favor the twilight period when the crew of what Al calls "a corker little yawl" would like to be settling down for the night.

Before describing it let me explain that in the Caribbean Sea we have seen more varieties of clouds and more combinations than the imagination can encompass. I used to cite the region of the Azores as the unrivalled cloud factory of the Western Ocean, but I shall hereafter refer budding meteorologists to the south shore of Cuba.



Native fishing craft were drying their sails as we stood out past Morro Castle

One sees here pitch-black masses that along the Maine Coast would turn a hardened salt gray with fear, and thinks nothing of them. The sunsets are often a nasty, wind-torn green that in the vicinity of New York would send crack Atlantic liners looking for shelter up the Shrewsbury River—and the night is calm and starlit. The sun rises behind a bank of cumulus, covering the whole eastern horizon and gleams wickedly through a small aperture in its exact centre, or doesn't show at all until it has attained an altitude of forty-five degrees. The remainder of the day may be calm and cloudless. At times cirrus whips out in long streamers overhead, mackerel clouds stretch through an arc of 180 degrees, and all the forms of cumulus clutter up the heavens. Rain falls at half a dozen places from vicious-looking nimbus, and rainbows appear when there is no rain in sight.



The skipper puts a patch in the jib

All these manifestations of a cloud-mad region we bear with equanimity, but when we see a monumental mass of opacity collect all the little clouds to itself and bear down on us, we say "bayamo" and stand by for a ram. Joe Squibb puts the boom in the crutch, Joe Chambers prepares to ease the battens between the lazy-jacks and I take my place at the halliards—and generally before the wind hits us we are snugged down with only jib and jigger spread. The wind comes in a fifty-mile gust, the sea rises as if by magic and is as miraculously beaten down by a deluge of rain which, mingled with spray, strikes us horizontally. For an hour or less we make the course that the wind will let us, and then for a watch or more we slat about in an unmitigated calm.

That's the average bayamo, but occasionally one packs a wallop that is not quite so pleasant. Yet on the run to the Isle of Pines we were acquainted with these freaks of nature by a squall that was practically windless. Rain fell and wet us and the sun came out and dried us and we did not bother to lower the mainsail, although what little wind there was whipped right around the compass and reminded us unpleasantly of hurricanes. This was our happiest experience with the tribe, except in the instances when the bayamos missed us altogether.

Luck was with us in our landfall on the Isle of Pines. At noon I had taken a sight for latitude which I distrusted, and in the afternoon I had worked a St. Hilaire sight for longitude which met with little better favor. But from a ten P.M. dead reckoning position we laid a course which, forty miles extended, should have brought us up to Point Francis, on the western end of the Isle of Pines.

Standing the first watch that evening I recalled that the captain of S. C. 190 with whom we hobnobbed at Key West had told me that the Isle of Pines is seventeen miles away from the position indicated on the chart. Whether it is seventeen miles east or west I couldn't remember, but when Chambers relieved me I relayed the imperfect information to him and advised that he be particularly watchful toward the end of his trick. He was. Moreover, his sea-going intuition stood by him, for at exactly 3:20 he had a feeling that land was near and took a sounding.

Fifteen feet of water, and ten minutes previously we had been sailing in fifteen hundred fathoms!

With all hands on deck we hurriedly put about and then anchored in four fathoms to await the light of morning. When it came it revealed, bearing on our course, the 60-foot skeleton tower by which the skipper of the 190 had told us to recognize Point Francis. So our luck was better than my navigation—which, under the circumstances, was endurable.

It was my intention during our two-day stop in Siguanea Bay, a large bight, formed partially by the encircling arm of Point Francis, to take several sights for determining the longitude of the point, but neither then nor in the following days in which we lay becalmed south of the isle could I get a decent sun from which to make my sights. So I can only advise others to be careful when navigating in the vicinity of the Isle of Pines.

The southern side of the isle has little to attract yachtsmen, and we put in only to take the ground and scrub our sides with sand to cleanse them of the oil accumulated at Havana. A "town" shown as Los Indios on maps of Cuba and indentifiable from the chart by the appellation Indian River is inhabited by a customs inspector, two friends, and a small boy. Food cannot be bought, water is only obtainable by rowing three miles up the river, and gasoline is an unknown quantity. But we accomplished our purpose, slept in for two nights, and came

(*Continued on page* 86)

Going to Florida This Winter?

Florida Is the Rendezvous of the Pleasure Craft of the United States During the Winter Season—They Come Together From All Parts of the Country

THIS is the time of year when most of us begin to wish that the pleasant summer season might stretch out a few weeks longer and give us some additional enjoyment out of our boat. Many of us are so situated that the approach of cold weather does not curtail our boating activities but rather transfers our interests from one place to another.

Hundreds of motor boats and yachts of all sorts and varieties will shortly begin the voyage of 1,300 odd miles to Florida. Almost any boat can make the journey but for reasons of comfort it is advisable to go south in a well found cruiser of about three feet draft. Many places encountered along the way, particularly in the southermost portion of the trip will not pass vessels of much more than three feet draft. While it is true that four feet can be carried, difficulty will be found at many places and the same freedom and mobility of the shallower draft craft is not allowed them.

For the power plant, it is essential that it be of the utmost reliability. Speed is an advantage but not nearly as essential as nonstop reliability. Besides, the boat which is travelling rapidly will simply run that much higher on the sand banks and be increasingly difficult to get off again.

During September the Chesapeake has a tendency to get rough and nasty at times. By the beginning of October however, it has generally settled down and ideal conditions will be found.

Some of the most essential items of equipment are a complete set of government charts for the entire stretch to Florida. The investment will be amply repaid in the feeling of security which their use brings. Coast Pilots Sections C and D which cover this section are particularly useful and should be carried. Another government publication which will be found to be particularly useful is the *Inside Route Pilot,* New York to Key West. Any or all of these publications can be obtained from any of the agencies of the Coast and Geodetic Survey which are published from time to time in the *Notices to Mariners* and which have also been published recently in connection with MoToR BoatinG's Correspondence Course.

A most reliable compass of ample size is a necessity as some of the courses which it will be necessary to run will vary from forty to fifty miles or more. Anchor equipment should also be in good condition. Three anchors with about 35 fathoms of sound line to each will not be too much. They should be light, medium, and heavy, and while the light one will be sufficient for ordinary occasions the heaviest one may also be called upon at times.

Steering gear, etc., will be given hard service on occasion and should be well overhauled before a start is made as all doubt as to its condition should be removed. The motor should also be absolutely dependable. A cruise to Florida will require as much running in a few weeks as the boat will ordinarily get in a year or more.

Owing to the certainty of running aground at least several times before reaching your destination it is a wise precaution to sheathe the bottom and vertical sides of the keel for several inches with twenty-two gauge copper sheeting with closely spaced copper tacks. This will prevent the paint being scraped off when grounding, and in this way make it difficult for the Teredo and other species of boring worms to find a place to start operations. The liberal and frequent use of copper paint should not be neglected.

Several ash boat hooks of at least 14-feet length are also desirable. These poles will be found to be particularly useful in entering and leaving canal locks and when helping the boat off the sand bars. Further use will be found for them when tying up to the banks in canals or rivers. Here they are thrust in the mud on the shore side of the boat and will prevent the boat being scraped by coming into contact with the shore. Of course a light line should be made fast to the pole to prevent its coming adrift.

The one constant question is bound to be "How deep is the water here?" and to answer this expeditiously and correctly, a sounding rod should be fashioned out of a long bamboo fish pole. This is prepared by tying a piece of cotton cord around the pole three feet from the big end, three feet higher two wrappings of cord are attached and the method of use which is obvious will serve to instantly show the depth of water as often as may be desired. This does not mean that the lead line is discarded. On the contrary, as soundings in deep water can only be made with the regulation lead this is essential also.

For passage through the several canals six or eight good fenders are advisable. Sacks filled with straw are commonly used for this purpose and can be cleared out and stowed for the return trip, after the passage through the Albemarle and Chesapeake Canal has been made as this is the last one you will meet.

Beginning with the Delaware and Raritan the first portion of the journey will take you through the forty-four miles of canal with thirteen locks. The toll charges assessed here are at the rate of fifty-six cents per mile or a total charge for the average boat irrespective of size of $24.64.

Clearance papers are obtained at the first lock at New Brunswick and surrendered at Bordentown. There is a speed limit of 6 miles per hour. While there are many bridges which will be promptly lifted in the day time it is not advisable to travel at night as they may not be lighted. There are many good places to tie up in the canal for the night and when bound through the canal care should be taken to be out of it by midnight Saturday as it is closed for twenty-four hours on Sundays.

Starting down the Delaware River from Bordentown on the first ebb tide you will feel its influence all the day to Delaware City. As the tide is very strong at times it is advisable to use its help as it will make quite some difference in the run of nearly 70 miles. The Chesapeake and Delaware Canal is entered at Delaware City and is

(*Continued on page* 90)

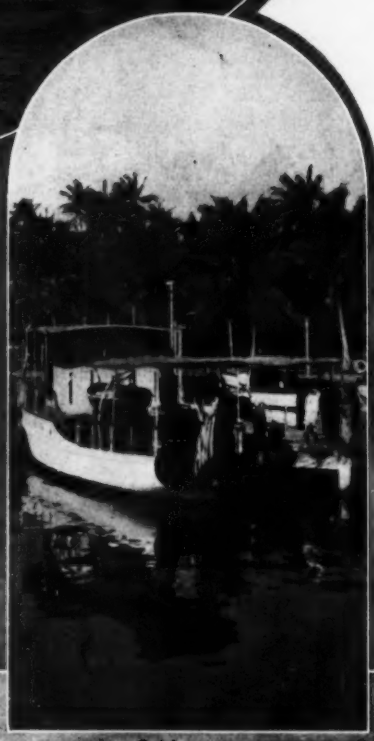
Twenty Day Schedule to Miami

Days from New York	From and To	Days Run	Miles from New York
1	New York, N. Y. to New Brunswick, N. J.	33	33
2	New Brunswick to Bordentown, N. J.	45	78
3	Bordentown, N. J. to Chesapeake City, Md.	83	161
4	Chesapeake City to Annapolis, Md.	57	218
5	Annapolis to Norfolk, Va.	155	373
6	Norfolk to Coanjock, N. C.	50	423
7	Coanjock to Beaufort, N. C.	142	565
8 - 9	Beaufort to Charleston, S. C.	240	805
10	Charleston to Ashepoo River, S. C.	58	863
11	Ashepoo River to Thunderbolt, Ga.	78	941
12	Thunderbolt to Doboy Sound, Ga.	67	1008
13	Doboy Sound to Mayport, Fla.	92	1100
14	Side Trip to Jacksonville, Fla.	52	1152
15	Mayport to St. Augustine, Fla.	39	1191
16	St. Augustine to New Smyrna, Fla.	69	1260
17	New Smyrna to Cocoa Rockledge, Fla.	65	1325
18	Cocoa Rockledge to Fort Pierce, Fla.	69	1394
19	Fort Pierce to Palm Beach, Fla.	56	1450
20	Palm Beach to Miami, Fla.	74	1524

All the chart numbers which follow are essential on the trip to Florida, these can be obtained from any of the agencies of the Coast and Geodetic Survey and no boat should undertake the trip without the full set. In addition the Inside Route Pilot from New York to Key West which can also be secured at the same agencies is recommended.

1108, 1109, 1110, 1111, 1112, 369, 375, 296, 295, 294, 1218, 1226, 1225, 77, 78, 1224, 1223, 1222, 549, 548, 539, 557, 534, 494, 400, 451, 1227, 407, 1228, 1229, 1231, 1232, 1233, 1234, 420, 421, 147, 148, 150, 151, 152, 428, 153, 154, 431, 155, 435, 437, 571, 440, 441, 443, 444, 446, 447, 448. 453, 156, 157, 158, 577, 159. 160, 161, 162, 163, 164, 165, 166, 167, 455b, 455c, 455d, 508, 509, 458.

When the spirit of restlessness courses through our veins is the time to decide on a trip to Florida. The land of sunshine is calling and the many boats are mutely rebelling at a winter of inactivity. Go while the mood is on you. Your boat will answer her helm readily, run sweet and true and stand any amount of punishment as long as her nose points to the south. It is natural that you should want to go south, and that your boat should want to take you. The school of experience is open and the process of learning is pleasant.



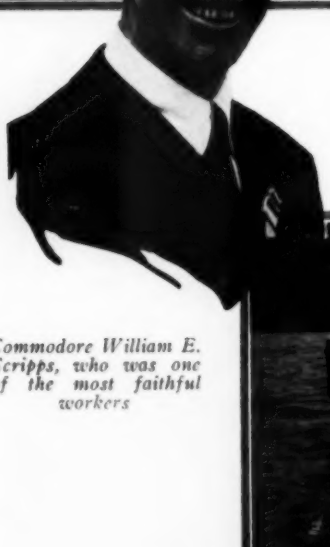
Photographs by Levick and Rosenfeld.

Start of the Miller Chance race in which 29 boats started, Elco Cruisette in the foreground

Detroit Regatta Huge Success

Races for the American Power Boat Association Gold Cup—The Wood-Fisher Trophy and Numerous Other Prizes Draw Out Immense Field and Produce Eleven Days of Racing

See Complete Summary of Results. Page 72



Commodore William E. Scripps, who was one of the most faithful workers

Adieu, second in the Wood-Fisher free for all race for runabouts. Adieu established new records for 2½, 50 and 150 miles for runabouts powered with marine motors. Her power plant is a Hall-Scott. The records were made on a 2½-mile circular course

THE races of the American Power Boat Association which are conducted every summer by the Detroit Yacht Club can no longer be called simply the "Gold Cup Races." True it is, that this trophy having been raced for annually for eighteen years without an interruption bestows upon the winner the highest honor in American motor boat racing yet the events and entire race meet have been so broadened by the Detroit Yacht Club that there is now racing for every type of craft and on account of the predominance of interest in the entire regatta the Gold Cup event by comparison has suffered somewhat in importance. From an event, only a few years ago, of three days' duration open to one class of hydroplanes the regatta has grown to such an extent that this year there were eleven full days of racing starting each day in the morning and running through until early evening. Boats and spectators gathered from every portion of the country and most of them took part in the sports one way or another. The number of starters varied in the various classes, in some of them there were as many as 30 boats approaching the starting line at one time. The events which drew the greatest number of starters were for cruisers and what might be called non-racing craft which goes to show how universal the interest is in the sport.

Of course the development of the Detroit regatta from the small beginnings which it had to the magnitude which it now assumes has been the result of much hard and consistent work on the part of first, a few members of the Detroit Yacht Club, and now a large number of Detroiters. It is pleasing to note that the same men who were instru-

One of the heats for the A. P. B. A. Gold Cup—Miss America I leading, followed by Miss Chicago and Orlo III

Baby Gar, Commodore Gar Wood's latest creation, which won the Wood-Fisher Trophy. She is a 32-foot runabout powered with a 12-cylinder Smith motor. She is the fastest runabout afloat, probably being faster than Orlo III with double the power

mental in the building of Miss Detroit I which came to the Gold Cup Race on Manhasset Bay in 1915 and won the trophy for the West are still interested and still work with as much enthusiasm as they did six years ago. They have joined with them much new blood and have formed an organization which works together with such clock-like rhythm that it is a model which all race committees might follow to advantage.

To reach this state of perfection has required much hard and consistent work. The absence of petty jealousies and racing protests which often mar the work of some race officials has done much to promote the feeling of good fellowship among the boatmen of the Great Lakes. Even this year with all details so highly perfected probably not one of the twenty-odd men in actual charge thought of business for the entire eleven days of the regatta. Racing was their business for that period and they stuck closely to it.

As usual, the genial Commodore Schantz, now raised to the rank of Admiral, was a fine master of ceremonies. Even though this kept him busy he found time to enter his cruiser Silver Heels and sail her himself in at least four of the events. He didn't win first place but that made no difference in his enthusiasm.

Of course Fred Still was at the helm as chairman of

Some of those responsible for the races, left to right: Mayor Couzens, of Detroit; F. R. Still, chairman of Race Committee; J. Lee Barrett; Com. A. A. Schantz, Secretary of Labor Davis and Henry Ford

Start of the race for "Bear Cats," one of the best events of the week

The timing was done electrically. It was in charge of Harry Sampson, official timer of the American Power Boat Association (shown in center) and Messrs. Myers (left) and Porter (right) of the Indianapolis Speedway

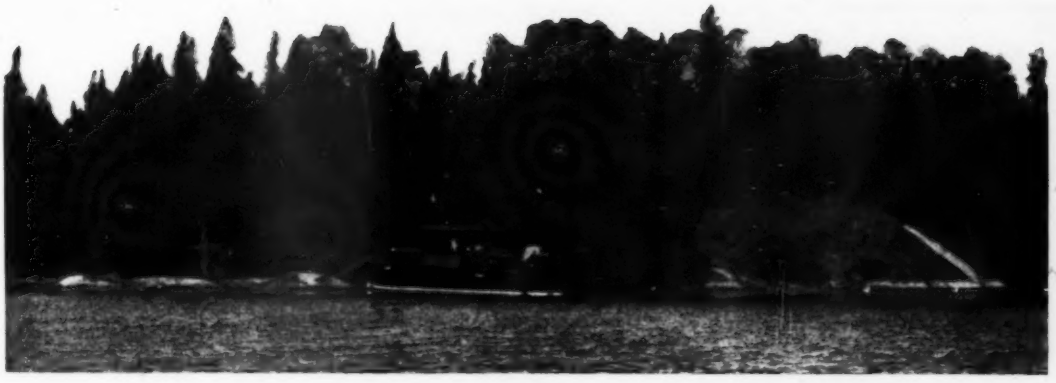
The express Cruiser race was won by Miss Liberty II, owned by Commodore Humphrey Birge, of the Buffalo Launch Club. Sea Horse, owned by J. A. Allison, won the MoToR BoatinG *Trophy.*

the Regatta Committee, assisted as usual by Otto Barthel and Hugh Gunnerson. Lee Barrett, who knows more about how to keep peace at a race meet than any other person in the world, was on the job all the time and had Neil McGuinn as an able assistant. "Eddie" Edenburn, who was the "find" at the races two years ago, was in full charge this year of entries, starting, scoring and a thousand other details. The way Eddie handled everything assigned to him was marvelous; in fact, he made some of the so-called officials step so lively at times that the judges' boat did not have some of the familiar faces aboard after the first day's events had been completed. Harry Sampson noticed just one thing that Eddie had forgotten, but as the committee boat was not anchored on the Canadian side of the International boundary Eddie was playing safe.

"Eddie" Edenburn, in charge of entries, starting and scoring. Much of the success of the regatta is due to his efforts

The method of timing the boats in this year's regatta deserves particular mention. On account of the large number of entries received for the many events—there were upward of 100—the question of timing and scoring was important. Many of the races are run on a 2½-mile course and with 30 boats racing at one time one can easily estimate how many boats might pass the timers in a given interval of time. This led the Committee to secure the electric timing system which has been used for a number of years at the automobile races at Indianapolis. In the motor car races the car passing over a wire makes an electric contact automatically; but quite naturally this arrangement would not be practical for the boats, so a hand trap was installed and the timer made the contact each time a boat crossed the line. The system worked out to perfection, the times being recorded to one one-hundredth part of a second. In the busiest moments 25 boats were clocked within 20 seconds. Messrs. Myers and Porter of Indianapolis were in charge of the timing apparatus with Harry Sampson, the efficient timer of the American Power Boat Association, at the hand trap. The courses at Detroit were laid out by the U. S. Lighthouse Service in charge of Captain E. L. Woodruff, and the arrangements could not have been better. For the Wood-Fisher and numerous cruiser and runabout races a 2½-mile course was used, for the Gold Cup the course was 5 statute miles in length and for the International race a 5-nautical mile course was used. The courses were well marked and buoyed. Lieutenant Commander H. G. Fisher of the U. S. Coast Guard was in charge of patrolling the course and that detail received careful supervision.

(*Continued on page* 66)



Gar Jr. at Brule Harbor. This harbor is entirely landlocked with the exception of a narrow entrance. The water is several hundred feet deep and the hills on all sides nearly a thousand feet high

Gar Jr. II Explores Uncharted Waters

Three Thousand Miles on the Great Lakes Demonstrates Again the Serviceability of a Speed Cruiser

PART II

By One of the Crew

I CAN'T take up the now famous cruise of Gar Jr. on Lake Superior where I left off in the September issue for I really hadn't begun. I'll call them introductory notes by the navigator which should be gone into in detail, I think, for to me the very best part of the trip was the first week that we spent along on the northern shore of Lake Superior, down under the gigantic hills, most heavily wooded with the choicest of evergreens, and birch trees and how many many times I wished we might have taken some of these trees to adorn our own home grounds, but would we appreciate them so if we had them all the time.

After we left Lake Huron, I haven't much to say in her favor for she treated us to every sort and kind of weather imaginable, and right then and there I wondered whether the trip planned would be worth while if such as that kept up. However, I found out to my own pleasure that Lake Superior was a great deal more decent when she decided to kick and stir up her waters and didn't think of tossing, turning, scrambling and making hash of us all in one day.

My really first impression was the haunted house, doesn't sound much does it—and it wasn't really,—only a picturesque little delapidated house built high on a rock and one lone tree as you see in many a Japanese print, and late into the night I watched for some one's ghost or departed spirit to return, but that much I was denied. However, I can long carry the picture in my mind of that charming little anchorage in St. Joseph's Channel on our way to the St. Marys River and through to Sault Ste. Marie.

All day was spent at the Soo and to me it seemed like much time wasted, but no doubt was absolutely necessary, for charts had to be procured, telegrams received and sent, provisions stowed aboard, and the all important gasoline and oil. Toward evening we made a short run and when I speak of short runs I mean 50 or 60 miles for with the Gar Jr. 200 or 300 miles a day didn't mean anything exciting in our lives. The short run took us to Wood's Haven, the beginning in my mind of a week of heaven on earth. The bow of Gar Jr. was run ashore, we slid down a gang plank for a romp on land away from every-

The crew on arrival at the Chicago Yacht Club, left to right: Miss Craig, Mrs. Wood, Gar Jr., Commodore Wood, Mrs. Chapman, C. F. Chapman, Joseph Kinney

The Duluth Boat Club whose hospitality to visiting boatmen and whose boating facilities are surpassed by no club in the country

Along the north shore Superior, near Port Coldwell

The shore line was like this for hundreds of miles

thing pertaining to civilization. I am fond of people and some social life thrown in, but to be able to get away absolutely from all but wonderful true nature and commune with her for a while gives one a new lease of life and such a different aspect of it. On shore we rambled about, gathering wild flowers, and spent some of the time picking wild raspberries and huge blue berries, each and every one of the crew (there were no guests aboard) happy and contented.

"What we don't do to-day we surely must tomorrow" is Commodore Wood's slogan and sometimes it was a bit annoying to some of the crew but he knew best the territory to be traveled and the time it would take. So oftentimes we would be on our way before "Old Sol" himself had decided to rise and I will say the more we did this the more I, for one, grew to like it to be able to enjoy the morning freshness of the forests primeval, for you know we hugged the shore all the way to Duluth. Such gentle ways of awakening us for those early starts, sometimes from the mellow strains of the Victrola and then times by the sweet aroma of coffee being brewed. Either was delightful and started us off right for the rest of the day.

From Wood's Haven we ran on 75 miles to the mouth of the Agawa River, a pretty stream winding its way down through the forests into the Lake, getting there before New Yorkers were having their breakfast. Then we dropped the hook for some of the boys wanted to try their luck with the speckled beauties up the Agawa and it was luck such as we all enjoyed. Brook trout for dinner and while they were away I stole off to the ponds where seine was being hauled and because our speed demon, as they considered our good ship Gar Jr., had scared an extra supply of lake trout, steel-headed salmon, and white fish into their nets, they gladly gave us a bounteous supply and requested that we make a run into their hailing port Garagantua that their families and friends might see and hear what seemed so wondrous to them. And we did run in there, on beyond these colossal hills, between gigantic rocks into a little harbor, mostly filled with a log raft, to the hamlet of Garagantua which, like most of the places on the charts, looked large, but so tiny in reality, with a few peace-loving families receiving the thrill that comes once in a life time on the arrival of the fastest

Tied up at Bayfield. Young America for miles around came down to have a look

The Commodore straightens a bent propeller blade. Note the home-made gauge so that all blades will be alike

speed cruiser in the world. Gasoline, of course, was our real object for making this port, but gasoline we could not get unless we remained a week or two for the lake steamer from the Soo. Then and there we began to realize we were up against a real proposition,—gas to keep the motors purring. For my part I didn't mind and shouldn't have until late summer for this all new country to me was so fascinating, I had the feeling of "I don't care if I never get back." However, it was more serious to a few of the bread winners on board who were making the trip more or less on schedule time.

When a squall approaches there is ample warning. When it arrives it isn't as bad as it looks and is over very quickly

From Garagantua we sailed 26 miles on to Michipicoten, a very much larger hamlet, by that I mean a railroad running through, a boarding house, several homes, and the village store. Our gasoline tanks could not be replenished there, but the good people thought on the Island of Michipicoten at Quebec harbor, 41 miles away, our chances were very good. We bore that all in mind and sailed away 10 miles down to Brule Harbor for the night. Imagine a serpentine course around large and small rock islands, then going between two massive wooded hills, being able to touch either one from the boat with hundreds of feet of water beneath you and then the prettiest little harbor one could ever dream of, looming up. On shore we immediately went, made ready for our evening bon-fire—yes we had them each evening, a moon and a Victrola and what more needed we to add to the romance of our cruise. Brule Harbor, to me, was by far the most delightful. One felt so absolutely apart from the world, just the remnants of an Indian tepee to remind you life had existed around there. We saw so many mother ducks with their ducklings giving them their first lesson in independence and we can predict for you a good hunting season.

All good things come to an end; so our stay in Brule Harbor and out into the fog we nosed our way to Quebec Harbor on Michipicoten Island, still in search of gasoline. I dislike to have you think that our minds ran more to gasoline than to the gorgeous scenery, which to me is beyond description, but by now it had become almost serious. When you consider we had 900 horsepower to be kept fed, that meant a great deal of gas consumption and to the dear friends on the Islands and northern shore of Lake Superior, 50 gallons was considered enough to take care of a whole town for a year, consequently four or five gallons would be all they had on hand, and we were welcome to it if it would do us any good, which of course it wouldn't.

At Quebec Harbor a small fishing town, we remained a whole day, some of us with a native guide going out for lake trout, others up the stream for brook trout. Fish again and plenty of it and how delicious. The next day to the Mainland, 88 miles to Port Coldwell, another little fishing hamlet, tucked in behind large and small islands. This run was made in the fog, not an object being seen for over 80 miles, but our landfall was perfect. The few inhabitants were glad to see

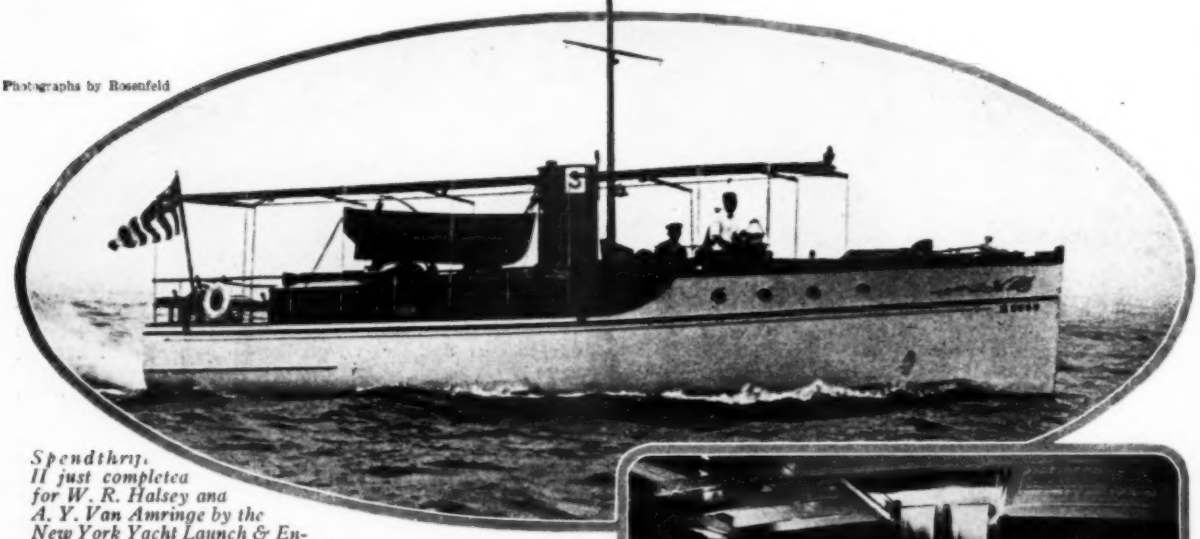
(*Continued on page* 108)

Even at Duluth there was no gas station on the water so the tank wagon had to be called. This condition exists everywhere on the Great Lakes

Spendthrift II, A Roomy Cruiser

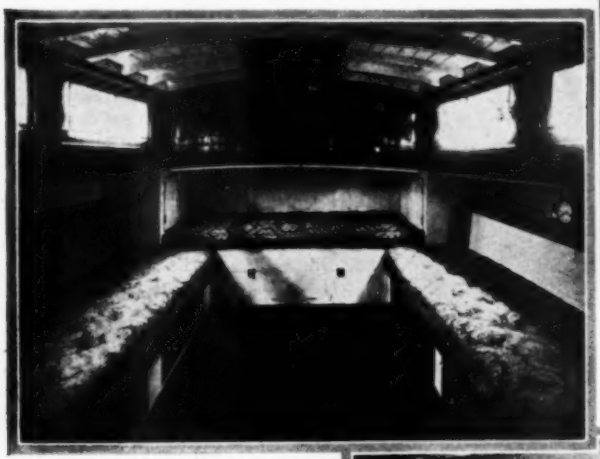
Latest Addition to the Motor boat Fleet on Long Island Sound Embodies Every Comfort and Refinement

Photographs by Rosenfeld

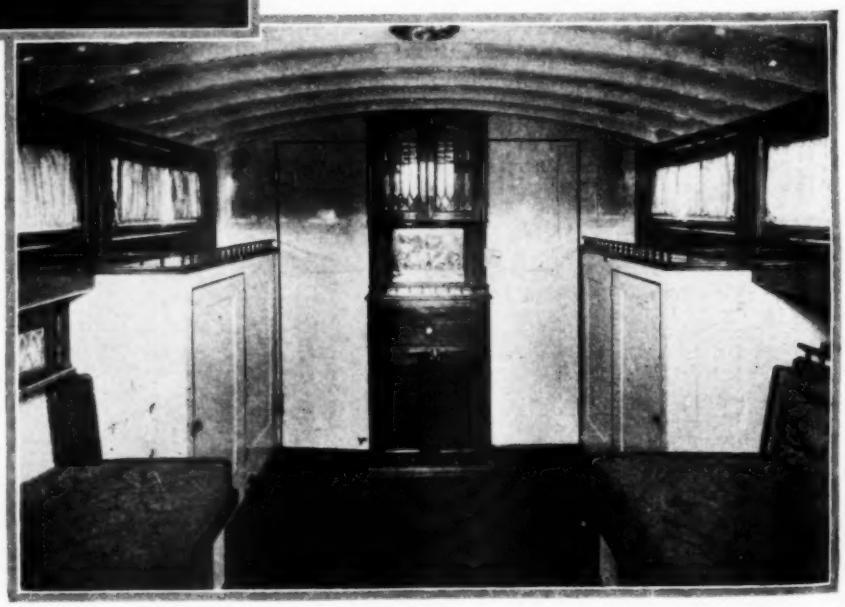


Spendthrift II just completed for W. R. Halsey and A. Y. Van Amringe by the New York Yacht Launch & Engine Co. is a most complete craft.

Her forward cabin designed for the owner's needs by C. D. Mower, the naval architect, is roomy and spacious. All motor noise and odors are shut off by water-tight bulkheads



After end of the main saloon, and below the forward end of the same compartment. Two wide transoms and a wide thwartship berth provide comfort for the owner's family



The power equipment selected for Spendthrift II is a four-cylinder 5½ x 6 inch Van Blerck motor which drives a Columbian bronze propeller at 950 revolutions. A resulting boat speed of 12 m.p.h. is attained. Spendthrift II has finally been declared the winner of the N. Y. C. A. race to Block Island held on July 9, 1921

You Should Be Able to Answer These Questions

Those Enrolled in MoToR BoatinG's Correspondence Course Will be Able to

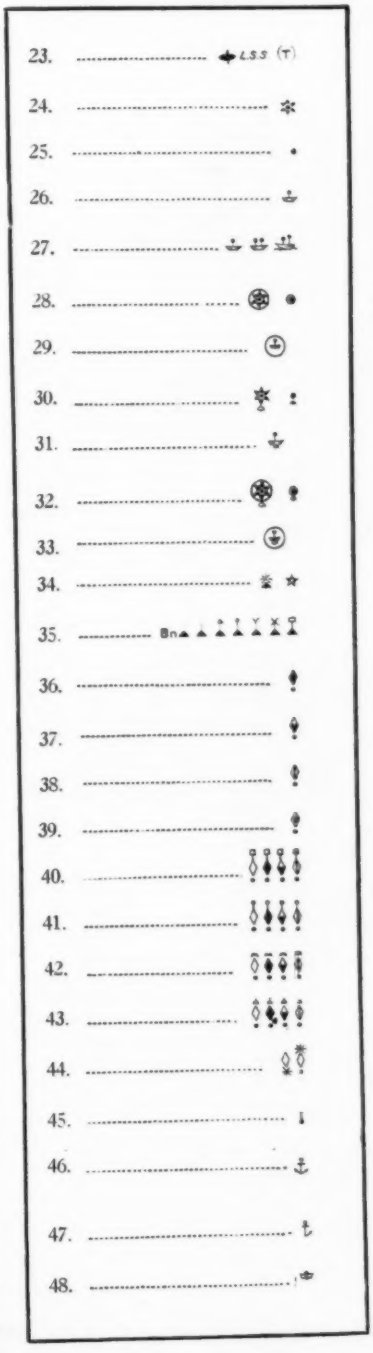
Questions for Correspondence Course Lesson No. 8

Published in September MoToR BoatinG

(Answers should be addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York City, N. Y., and may be submitted at any time.)

1. What characteristics of the bottom are shown on charts?
2. What characteristics of the land are shown on charts?
3. Name the three methods of showing depths of water on a chart.
4. How would one know whether the figures on charts indicating depths mean fathoms, feet and fathoms or feet?
5. Do figures printed on the clear portion of a chart always indicate depths in fathoms?
6. Do figures printed on the shaded portions of charts always indicate depths in feet?
7. What is a ten fathom curve?
8. Do the figures shown on charts indicate depths at high or low water?
9. Is the water ever shallower than indicated on the chart?
10. How does one determine for any particular time and place whether the water is likely to be shallower than indicated on the chart?
11. Can a general coastwise chart be safely used for inshore navigation?
12. Are all aids to navigation shown on all charts?
13. How does one know whether there is published a chart of any particular locality?
14. How does one know the number of the chart of a particular locality?
15. How may one determine where to purchase charts?
16. What branch of our Government publishes the charts of coastwise waters?
17. What branch of our Government publishes the charts of the Great Lakes and St. Lawrence River?
18. What branch of our Government publishes charts of foreign waters?
19. If the principal characteristics of a light are not given on a chart how does one determine same?
20. How should one determine the day appearance of a lighthouse shown on the chart?
21. What does the direction of an arrow shown on the chart indicate?
22. What does an arrow with tail feathers indicate?

Give the meaning of the following markings shown on the chart:



49. What does an arrow without tail feathers indicate?
50. What do the figures printed alongside of an arrow indicate?
51. How does one tell whether certain figures printed on the chart indicate depth of water or the number of a buoy?

Give the meaning of the following markings shown on a chart:

52. rky
53. stk
54. hrd
55. sft
56. bu M brk Sh
57. hrd S
58. crs yl S bk Sp
59. fne dk gy S M
60. gy S bu M brk Sh
61. fne yl gy S
62. *C1*
63. *N2*
64. *S15*

What is the method of indicating on the chart the following qualities of the bottom:

65. mud
66. specks
67. shells
68. pebbles
69. gravel
70. sand
71. How do you determine the scale of a chart?
72. If one wished to know the direction and force of the prevailing winds east of Bermuda which chart would give one this information?
73. What charts (give numbers) would be required in sailing from Boston, Mass., to New Rochelle, New York? (This question may be omitted if no catalog of Coast & Geodetic Survey Charts is available.)
74. What charts would be required in sailing from Sault Sainte Marie, Michigan, to Chicago, Ill.? (This question may be omitted if no catalog of charts published by the U. S. Lake Survey is available.)
75. What branch of the Canadian Government publishes charts of Canadian waters including Great Lakes, Lake of the Woods and Lake Winnipeg? Answer: Department of Naval Service, Hydrographic Survey, Ottawa, Ontario.

Note: The names of those who successfully passed the examinations in August will be found on page 84.

ENROLLMENT in MoToR BoatinG's Correspondence Course in Seamanship, Piloting and Small Boat Handling is still open to all those who wish to enroll.

Briefly this course is intended to instruct the motor boatman in the fundamentals of boat handling and watermanship. It is intended to be practical in every sense and not to cover theoretical situations or to cover situations with which the motor boatman is not constantly coming in contact with in the actual handling of his own boat.

In each issue of MoToR BoatinG beginning with the last February number there has been or will be an article covering some branch of the subject. Each of these articles will form a lesson in the Correspondence Course and in the issue following the issue in which the particular lesson is printed there will be published a number of questions relating to the subject covered in the lesson.

Those enrolled in the course submit their answers to these questions at any time convenient to them. The answers are submitted by us to the examiners once a month and the names of those who successfully pass the questions by at least 80% are published in a subsequent issue of MoToR BoatinG.

After the publication of the last article or lesson, those who have submitted answers to each lesson and have been successfully passed by the examiners, will be entitled to a MoToR BoatinG's Pilot Certificate suitable for framing, signed by the examiners and the Editor of MoToR BoatinG, certifying that the one in whose name the Pilot Certificate is issued, has successfully passed the requirements.

All that is necessary for you to enroll is to send your name at once to the Editor of MoToR BoatinG. There is no charge now or later. For those who have not yet enrolled and desire to do so, we have a limited number of back issues of MoToR BoatinG, containing previous lessons.

Figs. 180 and 181—*A lead and lead line should be aboard every cruising motor boat as it is the mariner's most reliable and faithful navigating instrument. Leads of varying weights from five pounds up may be had for motor boat use and the size chosen should depend upon the depth of water where the lead and lead line are used. A five-pound lead is about the lightest one practicable for ordinary use and is good for depths up to 100 feet, when the boat is not making headway through the water. A cotton lead line of the braided type should be used and should not be less than 30 fathoms in length. Figs. 180 and 181 show two convenient methods of casting the lead. Some motor boatmen prefer to have the lead line coiled up on deck so that it will flow freely from one hand while others prefer to hold the entire coil in the left hand. In either case a light hold of the line is kept by the right hand so that the touch will feel the change in tension of the line as the lead reaches bottom. The lead should be cast from a position well forward on the starboard side. The boat's headway should be materially reduced and the lead cast well forward so that by the time the lead reaches the bottom it will be directly below the position from which it is cast. The marking of the lead line is a very important consideration and various depths. The certain standardized markings are used to indicate the variation method of marking the lead line is explained in the text below*

What Navigating Instruments Shall I Carry Aboard?

A Discussion Dealing With the More Simple Apparatus With Which Every Motor Boatman Should Be Familiar—Instruments Which Will Be of Use in the Next Lesson on Piloting

MoToR BoatinG's Correspondence Course Lesson No. 9

See page 84 for names of those who passed examinations in August

THIS lesson, which is No. 9 in the Correspondence Course on Small Boat Handling, Seamanship and Piloting, deals primarily with a discussion of several of the instruments or apparatus which will be used when we come to the next lesson which will be on the subject of piloting. In this lesson we will discuss only briefly the actual use of the instruments as this will be taken up in much more detail in the next lesson. However, every student enrolled in the course should become familiar with the very few instruments which it is necessary to have aboard for coastwise and inland work so that he will recognize them and know something about them when the time for their actual use arrives.

List of Navigating Instruments for Small Boats

Compass
Celluloid Course Protractor
Dividers (bronze)
Pelorus or Bearing Finder
Patent Log and Log Line
Lead and Lead Line
Good Timepiece
Deviation Card
Log Book

Also Latest Edition of the Following

Charts
Coast Pilot
Lake Survey Bulletin
Tide Table
Buoy List
Light List

The Lead and Lead Line

(See Figs. 180 and 181)

Of the instruments necessary for successful piloting, a motor boatman should be familiar with a few of the most common ones. Of these the lead line is probably the most useful. As is well known, the lead line is a device for determining the depth of water, and consists essentially of a suitably marked line having a piece of lead of a certain definite shape, somewhat similar to a window weight. For use on motor boats leads of various weights are used, ranging from five to fourteen pounds. A lead line of twenty-five fathoms is sufficient for all ordinary purposes. The deep sea lead weighs from 30 to 100 pounds, and a line of 100 fathoms or upwards is employed.

Marking the Lead Line

Lines are generally marked as follows:

2 fathoms from the lead, with 2 strips of leather.
3 fathoms from the lead, with 3 strips of leather.
5 fathoms from the lead, with a white rag.
7 fathoms from the lead, with a red rag.
10 fathoms from the lead, with leather having a hole in it.
13 fathoms from the lead, same as at 3 fathoms.
15 fathoms from the lead, same as at 5 fathoms.
17 fathoms from the lead, same as at 7 fathoms.
20 fathoms from the lead, with 2 knots.
25 fathoms from the lead, with 1 knot.
30 fathoms from the lead, with 3 knots.
35 fathoms from the lead, with 1 knot.
40 fathoms from the lead, with 4 knots.
And so on.

Fathoms which correspond with the depths marked are called "marks." The intermediate fathoms are called "deeps." The only fractions of a fathom used are the half and quarter. The length of lead lines should be checked up frequently while wet. The bottom of the lead is hollowed out, and the hole is filled with tallow or a like substance by means of which a sample of the bottom is brought up. The process of filling the lead with tallow is called "arming the lead."

(NOTE: The actual method of using the lead and lead line in navigation and piloting will be explained in detail in a future lesson).

The Sounding Machine

The sounding machine, which replaces the deep sea lead and lead line, has several advantages over the latter, inasmuch as it permits of faster and more accurate soundings being made while the boat is moving through the water. It consists of a reel of strong wire mounted on a suitable

(*Continued on page 92*)

Fig. 182 — *The pelorus or bearing finder. This is an instrument attached to the boat near the bridge which permits the helmsman or navigator to determine the bearing of various distant objects so that his own position may more readily be located. It may also be used for determining the deviation of one's compass by bearings. The pelorus generally consists of a bronze disc marked exactly similar to the compass card and so arranged that it may be revolved around its center and any point set opposite lubber line marked on the frame of the pelorus. When the disc or dial of the pelorus is set on a course indicated by the ship's compass with the proper correction for deviation then by means of sighting vanes the exact bearing of any object may be read off directly*

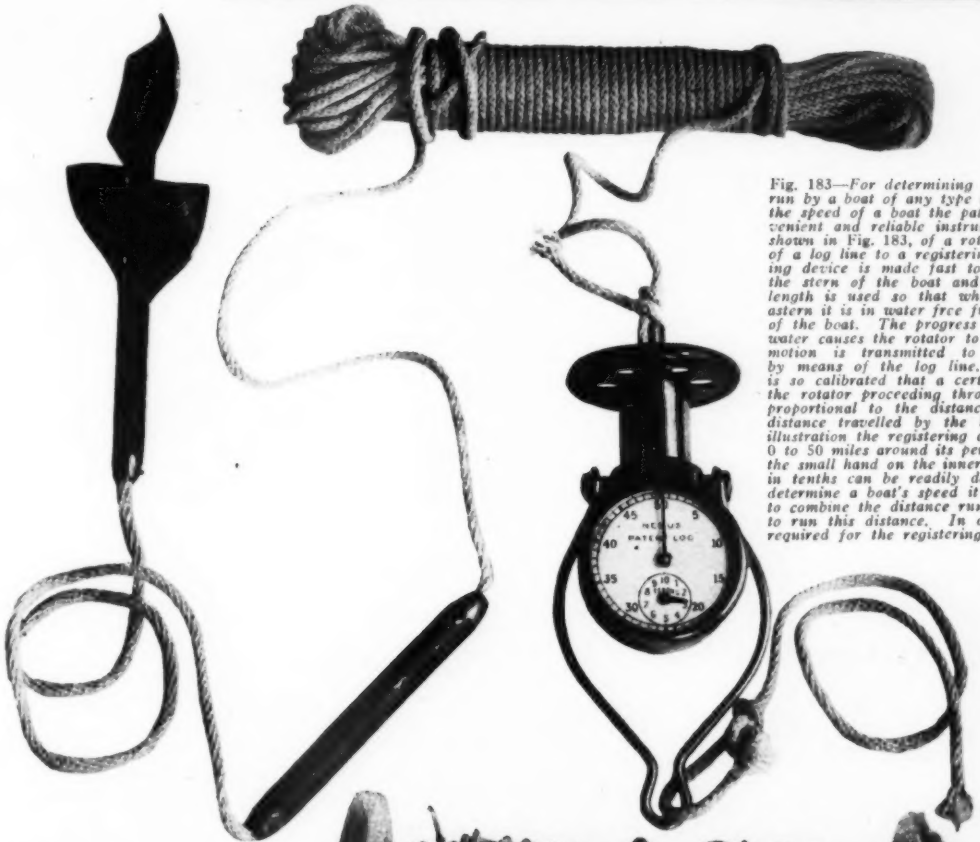


Fig. 183—*For determining the distance travelled or run by a boat of any type and also for determining the speed of a boat the patent log is the most convenient and reliable instrument. This consists, as shown in Fig. 183, of a rotator connected by means of a log line to a registering device. The registering device is made fast to some fixed object near the stern of the boat and a log line of sufficient length is used so that when the rotator is towed astern it is in water free from the wake and waves of the boat. The progress of the boat through the water causes the rotator to revolve and this rotary motion is transmitted to the registering device by means of the log line. The registering device is so calibrated that a certain number of turns of the rotator proceeding through the water which is proportional to the distance run will indicate the distance travelled by the boat. As shown in the illustration the registering device is calibrated from 0 to 50 miles around its periphery and by means of the small hand on the inner circle fractions of miles in tenths can be readily determined. In order to determine a boat's speed it is, of course, necessary to combine the distance run with the time required to run this distance. In other words, if the time required for the registering device to show from 0 to 12 miles be one hour then the speed of the boat would be 12 miles per hour. Rotators may be had for registering in statute miles as well as nautical miles but care should be taken to determine which rotator is in use at any particular time. Patent logs are not absolutely accurate and are subject to considerable error which varies, some depending upon the boat's speed, the condition of the sea, that is, whether it is rough or smooth, the distance astern which the rotator is, etc.*

Fig. 184 — *The chip log is another instrument used for determining the distance run by a boat. This consists of three principal parts known as the log-chip, log-line and log-glass. The log-chip is a thin piece of wood weighted so that it will float perpendicularly in the water. As it is thrown overboard from the boat it is supposed to assume a position of rest relative to the boat and a log-line thus attached to the chip-log if allowed to flow freely from the boat will be an indication of the distance run depending upon the amount of line which leaves the boat's stern during a certain time. The log-line is generally calibrated so that when used in connection with a small minute glass the length of line leaving the ship during a short interval of time will be a measure of the boat's speed and the distance run*

Fig. 185—*The course protractor is the most common of the navigating instruments used on the motor boat. This consists of a celluloid disc marked with the compass points and generally the quarter points and a movable celluloid arm attached to the center of the disc so that the arm may be revolved freely in any desired position. After the course which the boat is to follow is drawn on the chart so that it is made certain that all obstructions and dangers to navigation will be safely passed and only water of sufficient depth followed so that the boat will not ground, then the center of the course protractor is placed on the chart at the ship's position and the movable arm of the protractor is swung around in such a way that the hairline passing down the center of the movable arm passes directly over the center point of the nearest compass rose. It is then noted what point on the compass rose on the chart is covered by the hairline. For example, in the illustration shown the hairline coincides with NW x N on the compass rose with the center of the course protractor on the imaginary position of the boat. The next operation is to revolve the disc of the protractor keeping the arm firmly fixed in its position on the chart so that the hairline will cut the same compass point on the disc as it cuts on the compass rose. In the illustration on the left it will be seen that the hairline is cutting the point NW x N on both the protractor disc and the compass rose*

Fig. 186—*The next operation after following instructions given in* Fig. 185 *is to hold the protractor disc with the hands firmly in its position on the chart so that its center is still coincident with the boat's position and the position of the disc as fixed in* Fig. 185. *The movable arm is swung around in such a position that the hairline will be directly over the course to be taken by the boat. The hairline will now cut the point on the protractor disc which must be steered by the boat in order to make good the course chosen. In the illustration at the right, it will be seen that the hairline cuts the point NE x N ⅛ N. Therefore this course must be steered by the helmsman in order to follow along the course indicated on the chart. Naturally if there is any deviation to one's compass this error will have to be allowed for. However, this may be readily done without much calculating by simply revolving the protractor disc around to the right if the deviation is easterly or to the left if the deviation is westerly. For example, assuming that there was an easterly deviation of ⅞ of a point then the disc will be revolved ⅞ of a point in a right-hand or clockwise direction. This would bring the point N NE on the disc directly below the hairline on the arm and this would be the course which must be steered to allow for this deviation. On the other hand if there had been an error of 1⅛ points westerly deviation then the disc would have been revolved from its original position toward the left or anti-clockwise 1⅛ points. This would bring the NE point on the protractor disc directly below the hairline and would be the course which must be steered in order to make good this amount of westerly deviation.*

Fig. 187—*This is a form of home-made pelorus or bearing finder. It consists of a circular piece of hard wood as a base with four series of tacks placed at right angles or at 90° apart as shown. These tacks have the same function as a lubber line of the compass. On the wood base a compass card is mounted. This may be of any form desired and if it is not possible to obtain one of those compass cards used for advertising purposes one may be made at home. This compass card is mounted at its center so that it may be freely revolved. Mounted at the same center there is a horizontal arm which rests directly on the compass card. This arm is provided at each end with vertical members which are about six inches in height and have small holes at each upper extremity through which a distant object is sighted*

Fig. 188—*To use the bearing finder illustrated in* Fig. 187 *(above) it is only necessary to mount it in some suitable position on the boat so that one set of tacks on the base will represent the bow of the boat exactly as the lubber line of the compass does. The compass card of the bearing finder is then turned by hand so that these tacks will be opposite that point on the compass card which represents the correct course of the boat at the particular moment that the bearing is taken. Keeping the pelorus base and this compass card in this position the movable sighting vanes of the instrument are then turned so that it is possible to obtain a sight of the desired distant object through the holes in the two uprights. The bearing of that object will then be indicated on the compass card below, through one of the openings in the horizontal member of the sighting vane. If possible sights or bearings on a number of different objects should be taken as a check. In using this pelorus it is essential that the boat be on an even keel at the time the bearing is taken*

Fig. 189—*The sight vane. This is an instrument which is mounted directly on the top of the glass of the compass. It may be revolved on a pin which fits into a depression in the center of the glass or is sometimes arranged with a frame which fits over the outer edge of the compass top. By sighting through a slot in the nearer upright part and turning the sighting vane until a distant object is observed behind the upright wire in the more distant vertical vane the compass bearing of the distant object may be read through the round hole in the horizontal part of the sight vane. Various forms of sight vanes are manufactured by the different compass manufacturers but in principle all of them are the same*

Fig. 194. *Grip the opened strand with forefinger and thumb, as shown, and withdraw the fid*

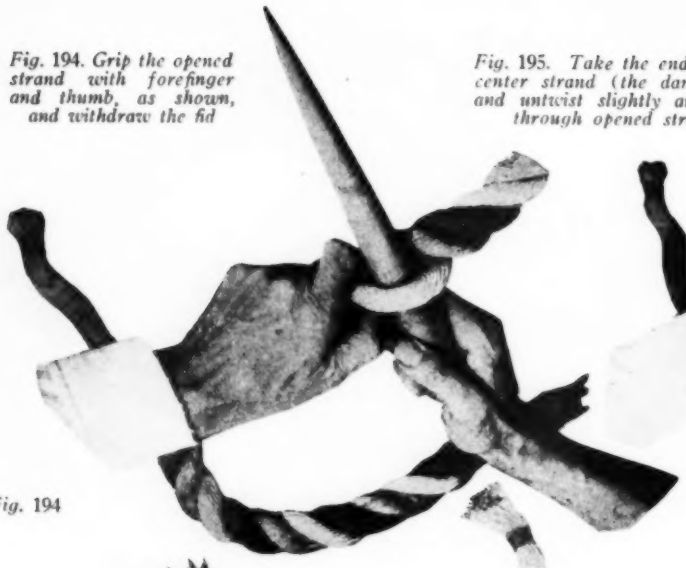


Fig. 194

Fig. 195. *Take the end of the center strand (the dark one) and untwist slightly and pass through opened strand*

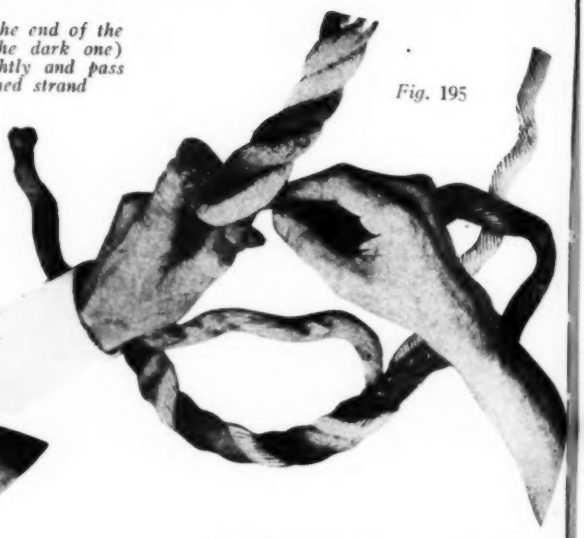


Fig. 195

The Eye-Splice

MoToR BoatinG's Correspondenc

We have had so many requests from reader and those enrolled in our Correspondenc Course to include in the course a few branch closely allied to motor boat handling which wer omitted from the original list of subjects to b covered by the course that we have decided t

Fig 192

Fig. 192. *Place the whipping the right distance up the standing part with one strand on either side and one in the middle, ends away from you*

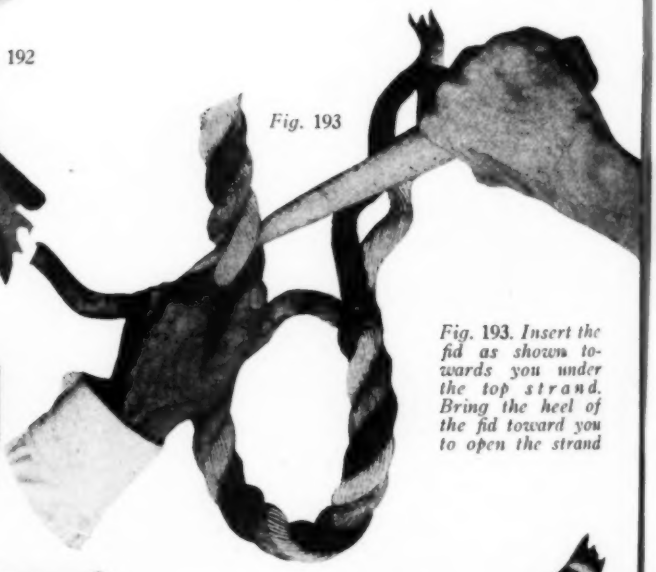


Fig. 193

Fig. 193. *Insert the fid as shown towards you under the top strand. Bring the heel of the fid toward you to open the strand*

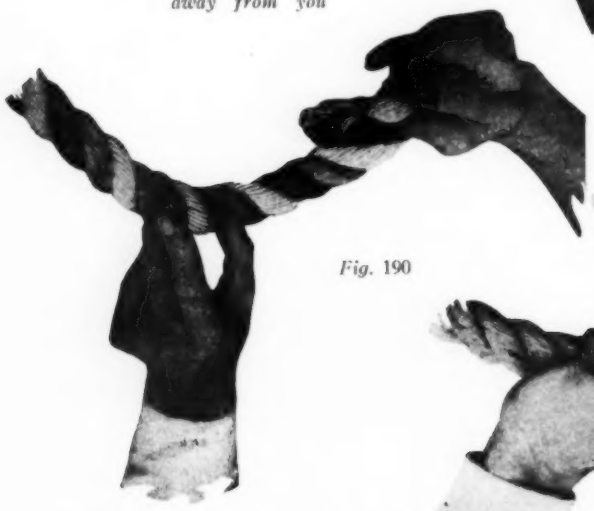


Fig. 190

Fig. 190. *Begin operations by placing a whipping around the end of each strand of the rope at the point where you are going to stop un-laying it, about* 18 *inches from the end*

Fig. 191

Fig. 191. *Take the rope in both hands and twist it open where you are going to make the tucks. Right sleeve is turned up so you can identify right and left*

Fig. 196. *Pull the strand well home holding the whole rope with the left hand*

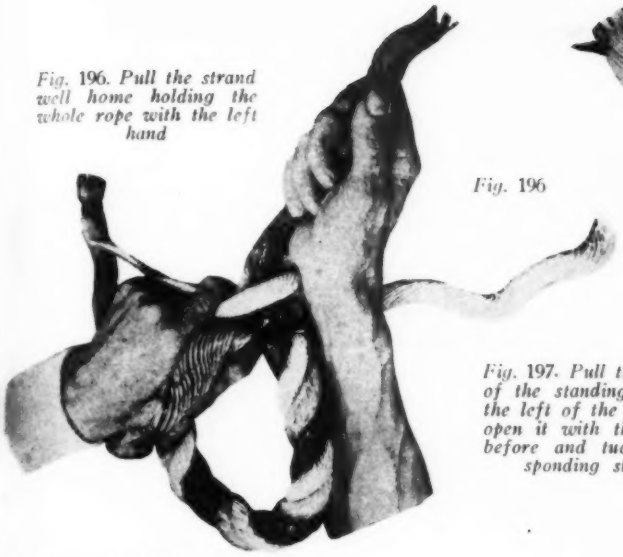


Fig. 196

Fig. 197. *Pull the strand of the standing part to the left of the first one, open it with the fid as before and tuck corresponding strand*

Fig. 197

Simplified

Course Lesson No. 9A

add a few additional ones occasionally.

Splicing seems to be something with which every motor boatman desires to be familiar. Therefore, we have prepared this pictorial article on splicing which gives complete information on the making of the eye-splice.—Editor.

Fig. 198

Fig. 198. *Open up the right hand strand and tuck the remaining strand crossing the standing part and tucking from right to the left*

Fig. 199

Fig. 199. *Cut the whipping around the rope and pull all parts well home. Start with right strand, then the left one and the first one last*

Fig. 200. *If not neat pass loose strand around the fid and twist it in a tightening direction from right to left*

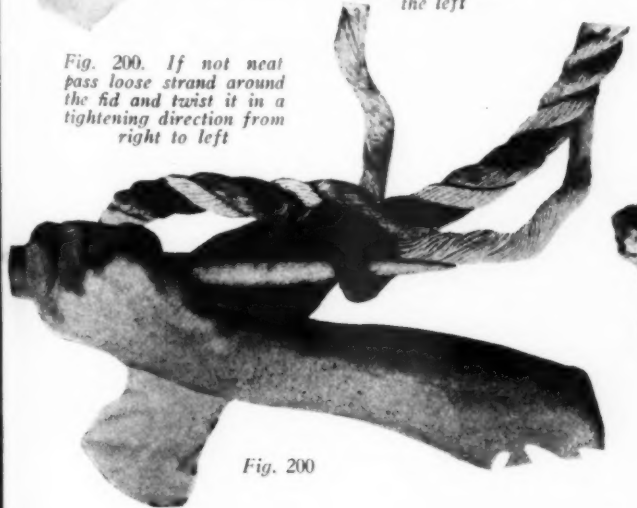


Fig. 200

Fig. 201. *Heavy ropes require force; enter fid along the lay by pressing heel against vest, twisting it to open the strand as before*

Fig. 201

Fig. 202

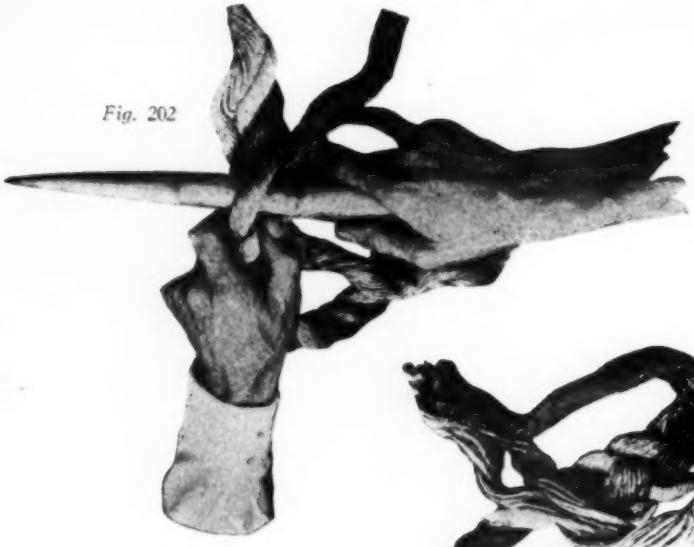


Fig. 202. The second tuck is similar to the first. Each strand goes over one and under the next. The last strand of the second tuck is being entered

Fig. 203. Cut out about half of the strand from underneath and then tuck the remaining half as before

Fig. 203

Fig. 204. Tucking the halved strands. The lay of the tucks should be at a longer angle than the lay of the rope proper

Fig. 204

Fig. 205. At this point again halve the strands and tuck remainder all around as previously. Then cut off all ends

Fig. 205

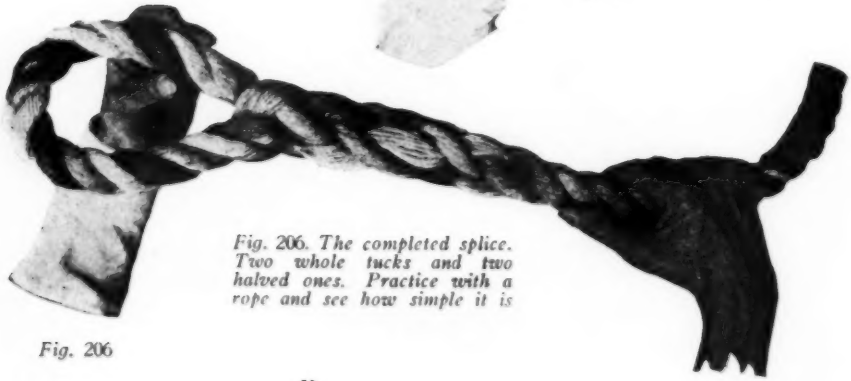


Fig. 206. The completed splice. Two whole tucks and two halved ones. Practice with a rope and see how simple it is

Fig. 206

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the December Prize Contest

1. Give drawings showing construction, connections and method of installation for a "blinker" signalling device, so that the boatman could communicate with nearby yachts during the night.
(Suggested by C. A. R., Roselle Park, N. J.)

2. Describe in detail the best method of testing and correcting a faulty alignment of propeller shaft, clutch and engine.
(Suggested by R. T. E., Ottawa, Canada)

Rules for the Prize Contest

ANSWERS to the above questions for the December issue, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before October 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before October 25. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions below, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are three prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer all.

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

Quick Detachable Power Bilge Pumps

Several Handy Devices Which Enable the Ingenious Motor Boat Man to Keep Bilge Dry at All Times

Answers to the Following Question Published in the August Issue

Illustrate and describe a satisfactory arrangement for a power bilge pump which can be quickly disconnected when not required

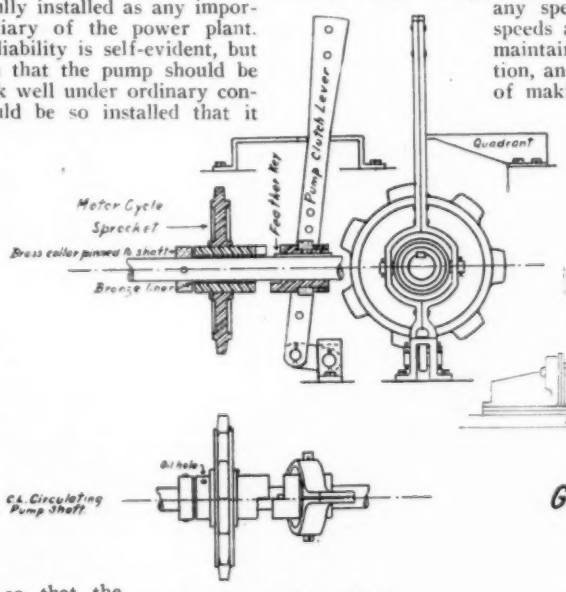
A Positive Drive

(The Prize-Winning Answer)

A POWER-DRIVEN bilge pump should be as well made and carefully installed as any important auxiliary of the power plant. The need for reliability is self-evident, but it is not enough that the pump should be reliable and work well under ordinary conditions. It should be so installed that it can be counted on to work as long as the engine will run; in other words the drive must be positive and not dependent on a belt, friction wheel, or other device that can be put out of commission by bilge water or grease. It is also desirable to have the pump driven from the engine itself and not from the propeller shaft so that the pump may be used when the boat is at her moorings.

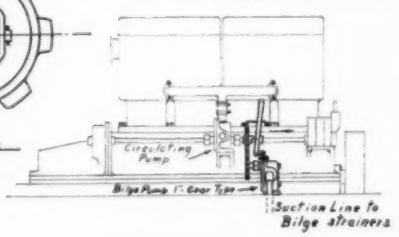
Plunger pumps work well at moderate speeds when equipped with fine bilge strainers to keep rubbish out of their valves. They make good bilge pumps when attached to slow speed engines but are not nearly so well adapted to use on the average medium or high speed engine as the simpler gear pump. The gear pump runs well at almost any speed—it does not become inoperative at low speeds as does the centrifugal—it is simple, easy to maintain, is self priming if kept in first-class condition, and can be purchased for a fraction of the cost of making a plunger pump. A one-inch pump will be found about the right size for a large runabout or small cruiser.

The pump should be gear or chain driven from the circulating pump shaft, the cam shaft, or the generator shaft. A bilge pump should not be driven from a light shaft intended only to drive a magneto or timer. A positive clutch should be provided for starting and stopping the pump. The accompanying illustration shows such an installation, the pump being a one-inch machine and the driving gear improvised from a couple of motorcycle



Pump Clutch Details

Quadrant not shown in the plan view



General Arrangement

Bilge pump is driven by motor cycle chain and sprockets from circulating pump shaft
Pump is controlled by a jaw clutch

Details of the clutch pump control designed by W. M. A.

sprockets and a piece of chain to fit them. A jaw clutch makes it possible to start and stop the pump at will. As the drawing shows there is but little machine work on the whole outfit. One sprocket is keyed to the bilge pump shaft while the other is keyed to a steel jaw having a bronze lining in which the circulating pump shaft turns when the bilge pump is not running. Another steel jaw is made to turn with the circulating pump shaft by means of a feather key which permits it to slide back and forth into and out of mesh with the jaw attached to the sprocket. A small bronze collar and a lever built up out of two pieces of ⅛-inch strap iron riveted together control the sliding jaw. A quadrant consisting of a bit of ⅛-inch sheet metal bent to shape and having a tooth which the pump lever cannot pass without being sprung sideways a little serves to keep the pump clutch definitely in the in or out position.

The bilge pump is piped up to two strainers through a check valve which keeps the pump primed, though as stated above a gear pump in good condition is self priming. A strainer is located at each side of the keel and valves are provided to permit pumping from either or both sides at will. The strainers themselves are a very important part of the bilge pump equipment. The writer has found that small bronze boxes, about 6 x 6 x 4 inches drilled with ⅛-inch holes and then covered, open bottom and all, with 16 mesh bronze screen wire make the most reliable and rugged strainer obtainable. Strainers of this kind were illustrated in MoToR BoatinG for July, 1919. The outfit is completed by fitting a suitable guard over the chain to keep clothing or fingers from being accidentally caught in it.

W. M. A., Phila., Pa.

Power Bilge Pump

THE bilge pump arrangement illustrated here was installed in my cruiser four years ago and has required no other attention during that time than an occasional tightening of the ⅜-inch round belt which drives it.

It was considered important that the pump should operate while the motor is running idle, the drive was therefore taken from the magneto half-time shaft which also drives the engine circulating pump. It is therefore possible to pump the bilge dry while the boat lies at her mooring—a feature which cannot be had when the pump operates from the propeller shaft.

As shown by the drawing, the pump itself is a rotary one, delivering two gallons per 100 turns per minute. There is a total lack of vibration in a rotary pump as there are no reciprocating parts, and there are no check valves to cause trouble. However, dirt, splinters, etc., must be carefully strained from the flow to the pump as in any other type of pump or it will cause jamming.

The pump is located behind the motor and is driven by a ½-inch diameter steel shaft which runs parallel to the motor on bearings mounted on the engine foundation timbers. These bearings are cut from a solid piece of babbitt and drilled for the shaft, a small oil hole being drilled for lubrication. The pulleys are grooved for ⅜-inch diameter belt. A 2-inch diameter pulley being mounted on the forward end of the pump shaft and a 4-inch diameter one on the motor half-time shaft. This arrangement drives the pump at engine speed, which in my particular case is 700 r.p.m., delivering 14 gallons per minute at full speed. This I have found to be ample for a boat up to 35 feet in length.

For disconnecting the pump, the belt is merely thrown off and hangs stationary on the engine circulating pump stuffing box. This throwing off and on can be done very quickly while the motor is running with the aid of a screwdriver handle or other similar object. It can also be done with the hands; but remember safety first.

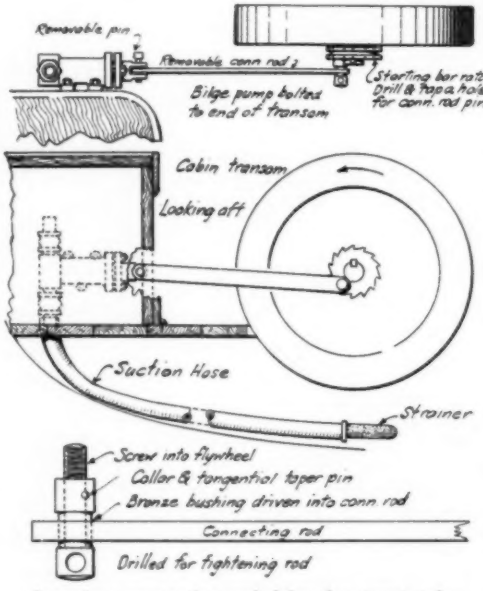
The pulley on the half-time shaft may be made split so that it may be assembled on the shaft without removing the latter, but in my particular case it was a simple matter to disconnect the shaft and slip the pulley into place, where it is held by cup-pointed set screws only.

To avoid the trouble incident to any misalignment between the pump and pump driving shaft, a home-made flexible coupling was made as shown in the drawing. The end of the pump shaft which is ¾-inch diameter, was drilled for a ¼-inch diameter pin, driving fit. This pin runs at right angles to the pump and is about 3 inches long, and is driven in so that it projects equally from each side of the shaft. The ½-inch driving shaft is fitted with a half flange coupling into which two ¼-inch pins are driven parallel to the shaft. These pins engage and drive the pin which is driven through the pump shaft, providing a very efficient flexible coupling. The belt should be a full sized ⅜-inch belt, as anything smaller than this will not drive as well.

W. E. M., Phila., Pa.

Bilge Pump Driven From Flywheel

THE sketch shows a plunger pump installed in the cabin of a small cruiser and driven by a removable connecting rod attached to the engine flywheel. Such a pump is also suitable for washing down decks by merely bringing the suction hose into the cockpit and pushing it down through a scupper or leading it overboard. The pump itself is out of the way, being located on the side of the cabin opposite the companionway, and the connecting rod is quickly removable. A disadvantage is that the connecting rod cannot be attached or removed without stopping the engine, but this caused no inconvenience in our case as the boat, a twenty-eight-foot raised deck cruiser, was provided with a self-bailing cockpit and did not leak, so that the pump was only used while at moorings.



Ingenious connecting rod drive for pump taken from flywheel by H. H. P.

The pump itself was the ordinary brass plunger type, such as is commonly used for engine cooling water circulation; as the cabin transoms ended conveniently opposite the engine flywheel, the engine being installed at the after end of the cabin with clutch under the floor, the pump was bolted to the end of one of the transoms. A toothed ratchet for starting bar was driven onto the crankshaft in front of the flywheel and this was large enough in diameter to be drilled and tapped for a driving pin; the engine being L. H., the usual right-hand thread was suitable for the drive pin, but a R. H. engine would require a pin threaded left-hand to prevent its unscrewing in operation. The pin was of steel with a large head cross drilled for a steel bar used in attaching and removing, so that no special wrench was required. A connecting rod was made up of rectangular cold-rolled steel stock and drilled at one end for the pump plunger pin; the other had a bronze bushing driven in to act as a bearing for the drive pin. Then a steel collar was driven onto the inner end of the pin, the connecting rod being in position, and secured by a tangential taper pin. Thus rod and pin would take off together with no loose parts to get into the bilge. The plunger end could be unpinned or the rod could be folded back against the cabin wall.

A suction hose with copper strainer at the outer end was pushed over the pump suction pipe and the discharge lead overboard by suitable hose. H. H. P., Oakland, Calif.

Keeping the Engine Free From Carbon

Suggestions for Maintaining the Motor So That Carbon Will Not Be Among Its Ailments

Answers to the Following Question Published in the August Issue

What methods have you found suitable for removing carbon from cylinders without taking motor down?

Water for Carbon Elimination

(The Prize-Winning Answer)

EXPEDIENT carbon removal methods are almost as varied and numerous as the causes producing this deterrent to satisfactory motor operation. For convenience, they may be grouped under three main heads: chemical, mechanical, and manual; although two or all of these methods are sometimes combined in the same general treatment.

One simple and economical method is by the introduction of water in a fine stream through the carbureter air intake while the motor is running. The chemical action resulting forms live steam in the combustion chamber, disintegrating the softer portions of carbon, which pass out through the exhaust as carbon monoxide gas. Some of the water vapor may condense on valves, cylinder heads, or pistons, causing pitting, rust, or crankcase oil dilution. This may be largely prevented by squirting a little light oil into the cylinders after such water treatment and then spinning the motor a few seconds, with gas to carbureter shut off.

Many prepared mixtures in both dry and liquid forms have had a large sale among motor boat and car owners. Some of these afford only mild or temporary relief. A few solvents are of basically simple composition, such as acetone, common salt, denatured alcohol, and kerosene in various mixed formulae. Their use is sometimes more rapid than with plain applications of water, kerosene, or alcohol. Some guarantee results if the motor is let stand only two or three hours after applying the prepared mixture. The smoky, dirty exhaust developed shows that much of the soluble carbon is emitted, with gases formed by the chemical, saline, and oily bases of these mixtures.

Denatured alcohol alone has proved satisfactory in many applications in the writer's personal experience. Small quantities have marked efficiency, with no oxidizing or other harmful effects on metal of valves, cylinders, or manifolds. It is easy to squirt or pour to carbonized surfaces and, due to its cleansing properties, does not damage crankshaft, connecting rod, or other motor bearings or parts when some leaks down past piston rings. Nevertheless, it is advisable to drain and flush out the crankcase after using a liquid or powdered carbon remover.

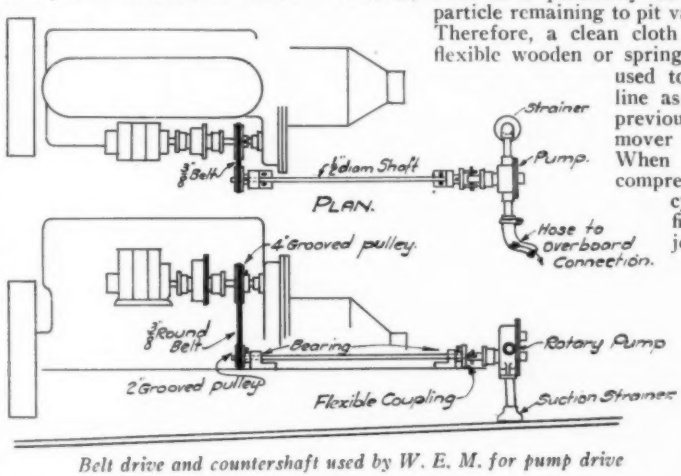
Kerosene is popular for its cleanliness, cheapness, and convenience and is also often used as a preliminary step in more elaborate treatments, including even burning out by oxygen. Kerosene, alcohol, or other liquids should be used moderately, rarely more than a few tablespoonfuls or about two ounces per cylinder. Injection should be made with each piston at top of compression stroke, valves closed, and motor heated to at least 140 degrees F. and allowed to stand four to eight hours for best results. It is best to disconnect a muffler pipe or open a cutout.

Burning out of carbon deposits with oxygen should be left to an experienceed man. This method produces quick and effective results at a small cost per cylinder. The considerable fire risk involved is lessened when gas lines, connections, and traps are all drained. Adjacent wiring, tubing, or ignition units should be removed or protected with asbestos padding. The maximum heat of the oxygen flame should never be directed on outer edge of piston heads or valves, because serious warping may result.

Use of mechanical and manual methods depends on the design of the particular motor. Numerous shapes and sizes of steel scrapers, wire brushes, disks, and chains have been developed for various motors. Some of these devices require outside power or the running of the motor, while others are operated by hand. One chain outfit the writer has used consists of a short length of rounded steel links which is placed on the piston heads consecutively, and the motor run for a few minutes, after which the chain is "fished" out. The shaking about of this chain breaks up most of the carbon into particles blown out through the exhaust. Some of the wire brushes which may be inserted in the chuck of a small, portable, electric or hand drill or ratchet screwdriver do a rapid and thorough job of carbon loosening on even hardened, scaly deposits. Hand scrapers are curved to fit various valve chambers and heads and have sharp, hardened points for cutting deposits.

With all these more or less convenient methods of carbon removal, there is a possibility of some insoluble, gritty particle remaining to pit valves or score cylinders. Therefore, a clean cloth or brush, wired to a flexible wooden or spring-steel handle should be used to swab out with gasoline as much of the surfaces previously treated with remover as can be reached. When available, a blast of compressed air into each cylinder makes a good finishing touch to the job.

D. McC.,
Cleveland, O.



Belt drive and countershaft used by W. E. M. for pump drive

Scraping Is Certain

WHEN the engine location and design are such that the carbon deposits can be reached, removal by scraping is the most effective method. Most all accessory and motorboat supply stores carry sets of carbon scraping tools with which it is easy to reach every part of an L or T head cylinder through the valve holes. With a little extra care the deposits in a valve-in-head or two-cycle engine usually can be reached through the spark plug or ignitor hole. A long handled, narrow, stiff steel wire brush is also a very effective tool for loosening the deposits when they can be reached directly.

Once the deposits are loosened, they can be blown out by air from the whistle tank, or a tire pump or bellows. If possible the cylinder should be wiped clean with a gasoline-soaked cloth held on a wire.

If the deposits cannot be reached with tools, they can sometimes be loosened by chemicals. Some of the various carbon removers on the market are effective for the purpose as are also wood alcohol, varnish removers and some

(*Continued on page* 50)

Mooring a Boat to Shore

What to Do in Order to Prevent Chafing and How to Secure a Boat in Tight Quarters

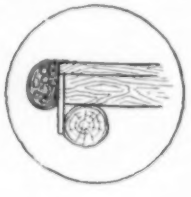
Answers to the Following Question Published in the August Issue

Describe a practical method of mooring a boat to the shore to avoid chafing of the hull where there is a rise and fall of the tide

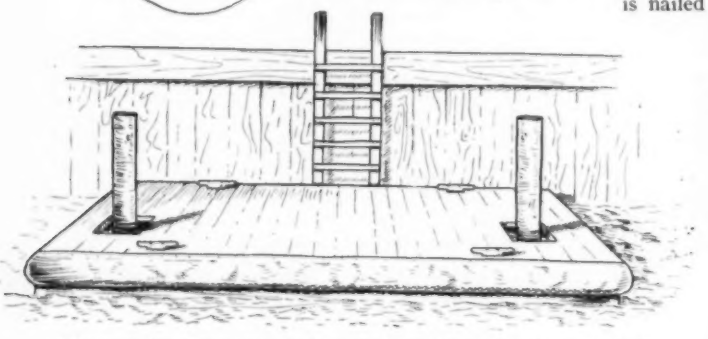
Mooring to the Bank

(The Prize-Winning Answer)

IN many localities it is perfectly feasible to moor a boat to the river bank. Where the boat's permanent mooring place is of this nature a little effort and work will keep it in good condition. The rise and fall of the tide will occasion the most annoying feature of this method of tying and can easily be allowed for.



The best and natural method of mooring a boat is to tie it by the bow to a suitable mooring anchor and buoy. Next best, is a location such that the boat can be secured to the shore and obviate the necessity of using the tender or small boat to get to and from the larger boat. The question apparently refers to such a location and since the method to be described is in satisfactory use in a similar case it will merit attention.



The use of a float for mooring purposes is suggested by T. B. K.

Suitable materials and accessories are necessary in order to construct various parts needed. The principal essential is a floating raft which should be constructed almost as long as the boat. This may be made 6 or 8 feet wide and solidly constructed of sound materials. In order to provide sufficient buoyancy 3 or 4 empty oil barrels can be secured underneath for the purpose, or some extra large logs will serve equally well. The deck of the raft should be of ample height above the water line and the displacement of the raft sufficient to carry as many people at one time as might be expected to step on it when disembarking at the end of a trip.

In order to hold the raft firmly in place a pair of stout posts or stakes are driven into the river bottom adjacent to the shore as firmly and deeply as is possible. They should be of sufficient length to project from 6 to 8 feet above the high water line and also allow of being driven an equal depth into the mud. A simple way to drive these stakes without power appliances is to set them vertically in the desired location and allow them to drop through openings in the raft and sink in the bottom as far as they will of their own weight. A small crosspiece is then nailed near the upper portion and a man mounted on it. By springing up and dropping down on this crosspiece the impact will readily drive the stake down into the bottom to the desired depth. Should the bottom be particularly hard it might be necessary to nail a heavier crosspiece to the stake and use two men, who must jump together.

In order to hold the raft securely openings are provided at each end through which the mooring stakes are driven. These openings are substantially braced with respect to the frame of the raft and wearing strips of oak are spiked on the inside of the openings to take the chafing as the float rises and falls with the tide.

The size of these should be limited to a few inches greater each way than the mooring stakes.

Cleats are fastened through the decking to the frame of the raft and used for securing the bow and stern mooring lines. Additional spring lines to the same cleats from one on the boat at a point about amidship will serve to hold the boat firmly in place with respect to the float. Further cleats are useful for holding small boats, etc.

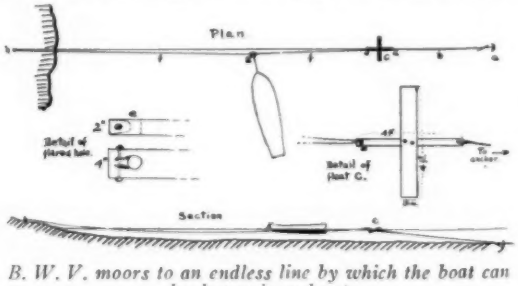
A protection for the outboard edges of the float can be attached and made up of old rope-ends and canvas. This is nailed on in such a way that there will be no exposed nails to bruise or scratch the hull.

The dimensions of the float as well as the size for its component parts can be left to individual requirements, and if a little care and effort are expended in constructing the parts one will be amply repaid in the freedom from bruises and the security for the boat which will result.

For connecting the deck of the float with the mainland, a ladder can be set in a suitable place or else an inclined runway may be used, as is the general practise. T. B. K., New York, N. Y.

Mooring to an Endless Line

THE type of small-boat mooring shown in the sketches herewith did me good service for many summers on the Maine coast, on a mooring ground exposed to a heavy chop when northwest winds came booming across three miles of open water. The anchor a is connected by a stout rope b to a float c, the rope being fastened through a hole in the float at d. At e in the other end of the float is a carefully smoothed hole through which runs an endless rope f to a stake on shore at j. This rope is closed by two loops on a galvanized ring g, to which also is spliced a short mooring line ending in a loop to pass over bow-post of boat. Details of construction of the float are obvious from the figure. The wide crosspiece, the purpose of which is to keep the float from turning over and twisting the shore rope, is bolted to the 2 x



B. W. V. moors to an endless line by which the boat can be drawn in and out

4-inch timber. Especial care should be taken to flare the holes in this timber on the sides nearest the ends of the timber, and to sandpaper them very smooth to prevent chafing. The shore rope will run with surprising ease if this is done. A hole 2 inches in least diameter will permit easy running of any rope that is likely to be used in this type of mooring. The centers of the holes should be not

(*Continued on page* 50)

The New Allison Twelve

Latest Development in High Speed Cruiser Motors—A Twelve Cylinder V-Type of 400- H.P.

THE latest example of marine motor engineering is the Allison Twelve recently perfected by Allison Engineering Company, Indianapolis, Ind. This motor which is illustrated here is the one which powered Aye Aye Sir and Sea Horse, the twin screw cruiser which won the express cruiser race at Buffalo recently. Sea Horse is owned by James A. Allison who is largely responsible for the design and construction of these motors. They are capable of developing 500 h.p. each when necessary. At normal speed of about 1,300 revolutions they are rated at 400 h.p. each. All the latest engineering features are embodied in their construction. They are intended only for the finest cruisers and motor yachts that float. Nothing has been spared in their design or construction to make them the finest marine motor ever built.

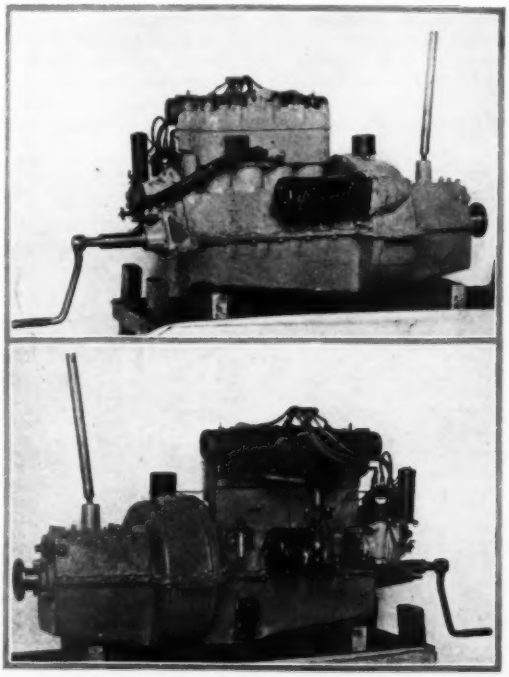
View of the forward end, and of the port side of the new Allison V-type twelve-cylinder marine cruiser motor

A New 15-H.P. Marine Unit

Small Four-Cylinder Motor in a Popular Size Just Brought Out for Marine Service

A NEW model marine unit is being announced by the Le Roi Company of Milwaukee, Wis. This is a completely enclosed 15 h.p. motor especially adapted to the unusually severe requirements of marine service. This marine unit is fully equipped with all the standard and accepted marine accessories including a two-unit starting and lighting system as well as reverse gear.

The Le Roi Company has been manufacturing heavy duty engines for many years and has over forty thousand of its fifteen horse power engines in actual service. This unit is the same machine with certain modifications to adapt it for marine service. The construction of the machine follows modern practice in that it is thoroughly enclosed with no moving parts exposed when the engine is in operation. The engine is remarkably efficient as well as extremely economical. It is correctly designed with all reciprocating and rotating parts in perfect balance. This means almost an entire absence of vibration. A large crankshaft with generous bearings well lubricated insures absolute freedom from bearing troubles.



Completely enclosed 15-h.p. Le Roi Marine Unit

While these motors heretofore have not been intended particularly for marine service several of them have been applied to this work so that the requirements for boat use are well understood by the engineers of the company. All of the experience which the demands of the boat users has developed has been applied to the perfecting of this special marine model so it can be classified with marine motors.

The plant in which these motors are being built is equipped with modern production machinery in all branches so that the capacity of 75 engines a day enables a high standard of quality to be maintained and at the same time permits of speedy production at relatively low costs.

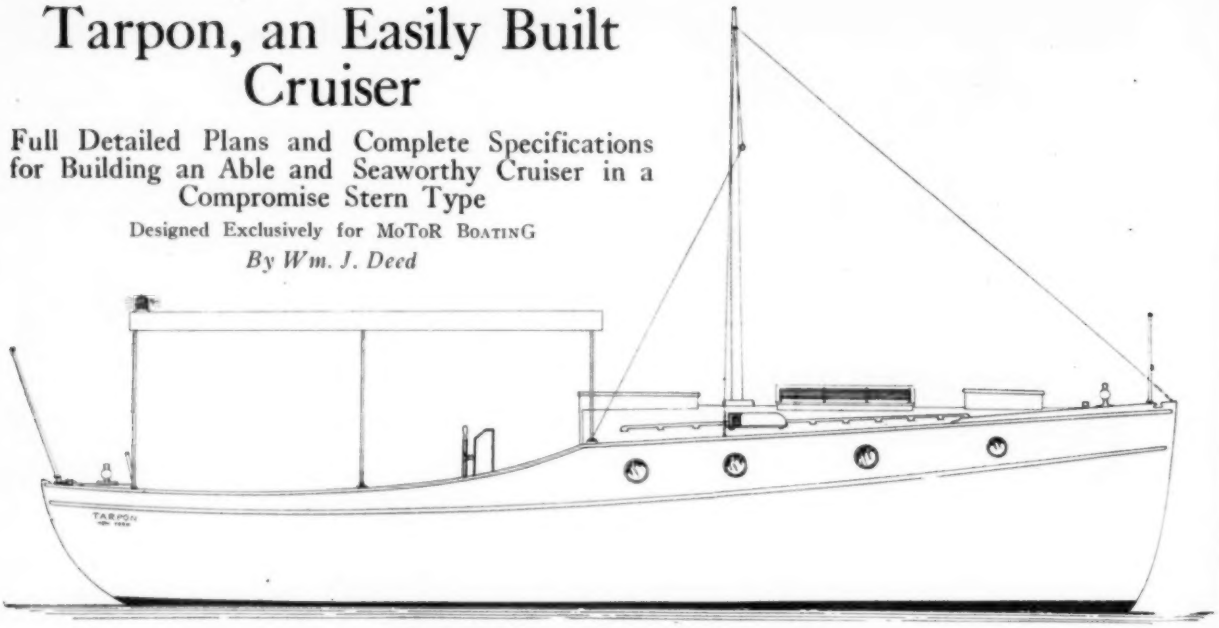
It would seem that this little motor would be most particularly suited to the requirements of small runabouts, motor tenders and cruisers owing to its compactness.

Tarpon, an Easily Built Cruiser

Full Detailed Plans and Complete Specifications for Building an Able and Seaworthy Cruiser in a Compromise Stern Type

Designed Exclusively for MoToR BoatinG

By Wm. J. Deed



Outboard profile of Tarpon, a 29-foot cruiser

MANY boatmen like the type of boat adopted in the design of Tarpon—the so-called compromise stern type. While an out-and-out whaleboat stern model would probably not appeal to most of our readers this compromise stern is one that has been quite popular with many and in our series we wish to give all our readers a boat of their liking, so far as possible. So if you don't want a transom stern boat see if Tarpon isn't interesting.

Mr. Deed has designed a great many craft of all sizes of this same model and has very successful cruisers to his credit so that you can be assured of a very seaworthy and comfortable boat. And if you build this boat don't let the sheer drop at the stern; keep the line up where shown, as that slight lift to the sheer at the very stern is a small matter, perhaps, but it makes all the difference in the world between a good-looking boat of this type and a poor one. The model has been given plenty of deadrise aft and the load water line is not too full there so as to make for good easy action in rough water, but above the water line the quarters are fairly full so as to provide bearing to prevent squatting or settling when driven. In building Tarpon the planking aft will have to be well steamed and when applied lay the middle of the plank at the big swell of the boat's side and press the ends down, clamping them down to the ribs. By using long planks and bending them in this way the breakage is reduced as short planks not well steamed or boiled (as some prefer in place of steaming) are hard to bend around the full curve there. Follow the lines laid down and you will have a good boat, but don't build one of those sterns shaped like a wedge caused by letting frames spring in; hold them out to shape.

Tarpon affords four good berths in the cabin, a good galley, a toilet room, and a cockpit 11 feet 7 inches long. The motor is housed under the bridge deck with flush hatches over for access to motor and plenty of clearance at the sides between refrigerator and shelves and the motor. Fit shelves on starboard side under the bridge and install batteries there up high away from bilge water, as many try to get service from batteries placed on the floor where they are constantly subject to the wash of bilge water as the boat rolls. The refrigerator is filled with ice through a flush hatch in the bridge deck and inside the cabin there is a large food compartment in the refrigerator. There is a full-height clothes closet on the starboard side. In the cockpit are three seats, two with fuel tanks under and rear seat with locker under. Under the cockpit are two 25-gallon fresh water tanks. Locating tanks in this way gives access to them without tearing down any joiner-work as is necessary if water tanks are installed in the bow; also it is better to locate the weight of a large quantity of water aft than in the very bow where there is more motion.

Some may have formed a prejudice against boats with a pointed stern rather than a chopped-off transom stern because they have seen so many of the former type running along standing on their tail, so to speak, with stern settled way down and seemingly dragging the whole ocean behind them. But poorly designed sterns of this type and overpowering them have caused such poor action and should not condemn the type, for if properly formed and powered this type is not only extremely seaworthy but runs clean and without perceptible settling aft. Flat lines aft are lines for speed and it will only waste fuel and money to try to push this boat beyond a speed of say, 10½ miles an hour actual speed, not rocking-chair, clubhouse talk. There is room for a 24-inch diameter wheel. A propeller 24 inches diameter turning 400 to 500 r.p.m. will be more effective than an 18-inch wheel turning 800

TABLE OF OFFSETS — CRUISER FOR "MOTOR BOATING" — WM J. DEED — NYACK, N.Y.

DIMENSIONS GIVEN IN FEET, INCHES AND EIGHTHS INCHES. 2-1-1 RISES 2'-1⅛". DIMENSIONS ARE GIVEN TO OUTSIDE OF PLANKING

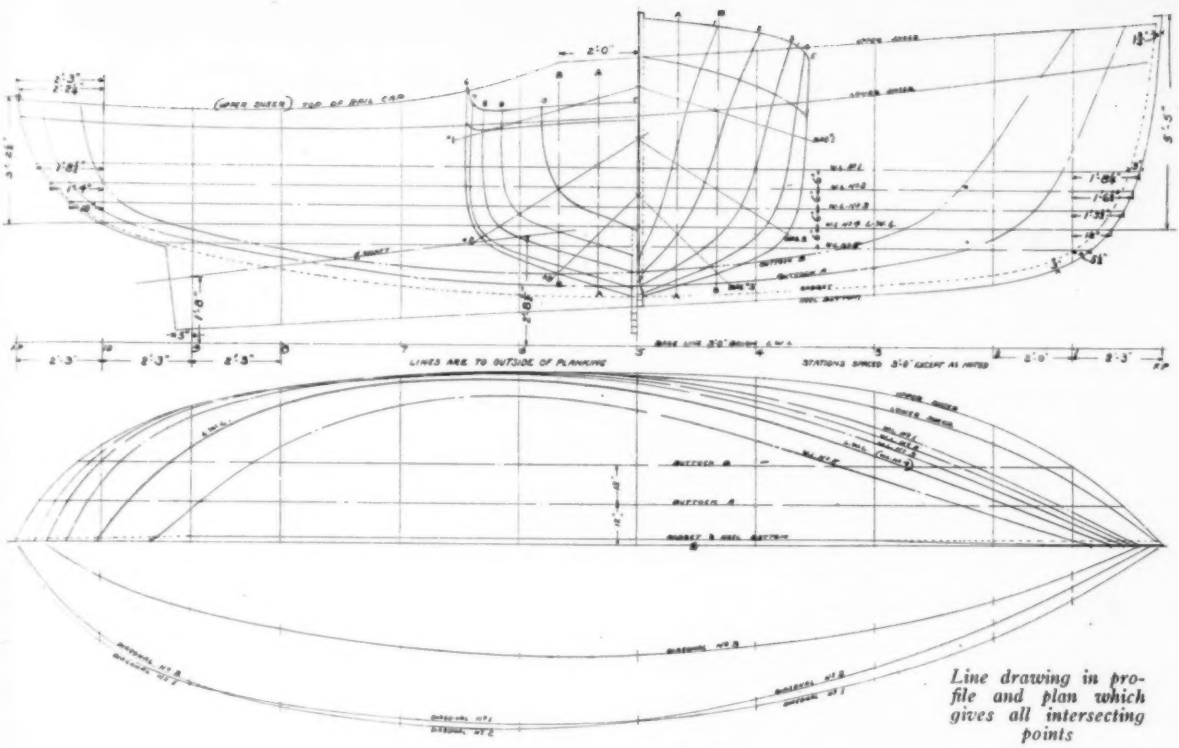
	STATIONS	FOR'D PERP.	1	2	3	4	5	6	7	8	9	10	AFT PERP.
HEIGHTS ABOVE BASE LINE	UPPER SHEER	8-2-2	8-0-5	7-10-5	7-8-0	7-5-1	7-2-6	6-9-0	6-1-2	5-11-0	5-10-4	5-11-4	6-1-2
	LOWER "	7-3-0	6-11-5	6-8-4	6-4-2	6-0-4	5-9-3	5-7-2	5-5-4	5-5-1	5-5-3	5-6-2	5-8-3
	RABBET		2-5-4	1-10-0	1-6-3	1-4-1	1-3-1	1-3-0	1-5-4	1-10-3	2-3-5	3-0-4	
	KEEL BOTTOM		2-2-0	1-7-0	1-3-6	STRAIGHT		LINE			0-4-2		
	BUTTOCK A		5-0-6	2-9-4	2-0-4	1-8-1	1-6-1	1-6-0	1-8-5	2-1-2	2-6-6	3-3-5	
	" B			5-1-2	2-9-2	2-1-5	1-10-0	1-9-4	2-0-0	2-4-5	2-10-3	3-11-2	
HALF-BREADTHS	UPPER SHEER		2-0-0	3-0-5	3-10-4	4-2-5	4-4-0	4-3-6	4-2-0	3-10-7	3-5-2	2-5-2	
	LOWER "		1-7-0	2-6-6	3-5-4	4-0-2	4-3-1	4-4-1	4-2-4	3-10-7	3-5-2	2-5-2	
	RABBET		1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"
	KEEL BOTTOM	3/8"	3/8"	3/4"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	
	WATER LINE #1		0-10-2	1-9-6	2-11-5	3-9-2	4-2-2	4-4-4	4-3-0	3-11-1	3-5-2	2-3-2	
	" " 2		0-8-6	1-7-5	2-9-3	3-7-6	4-1-4	4-4-2	4-3-0	3-10-5	3-4-4	2-0-4	
	" " 3		0-7-0	1-5-0	2-6-6	3-5-5	4-0-4	4-3-4	4-2-4	3-9-6	3-2-0	1-5-4	
	" (L.W.L.) 4		0-4-6	1-1-4	2-2-6	3-2-1	3-10-2	4-1-7	4-0-4	3-6-0	2-4-6	0-2-6	
	" " 5		0-1-7	0-9-0	1-8-2	2-7-2	3-4-7	3-8-6	3-5-6	2-4-6	0-9-6		
DIAGONAL	1		1-4-1	2-4-1	3-4-4	4-0-6	4-5-0	4-6-4	4-4-6	4-1-0	3-7-1	2-6-4	
	2		1-0-6	2-0-0	3-1-0	3-10-6	4-5-2	4-8-2	4-6-7	4-1-5	3-6-5	2-4-4	
	3		0-8-4	1-5-0	2-1-0	2-6-3	2-9-6	2-10-0	2-7-4	2-2-4	1-8-2	0-10-6	

DIAGONAL #1 INTERSECTS PERPENDICULAR 6-6-0 ABOVE BASE LINE AND W.L. #1 — 6-10-6 OUT

" #2 " " 5-2-4 " " " " W.L. #3 — 4-9-0 "

" #3 " " 3-9-6 " " " " BASE LINE 3-10-4 "

Table of offsets, which gives all figures necessary for laying down the lines of Tarpon



Line drawing in profile and plan which gives all intersecting points

r.p.m. About the best combination for this boat would be a wheel about 22-inch diameter by 20 inches pitch, turning about 600 r.p.m. and driving the boat 9 statute miles an hour. Such a wheel can be handled by a motor of 15 to 20 horsepower and will prove an economical installation. The writer once designed a cruiser very similar to Tarpon and three friends built to the design. One installed 10 h.p., the second 16 h.p., while the third hoped to be able to nearly double the speed of the 16 h.p. boat so he, much against the advice of the writer, installed a 30 h.p. fast motor. The 10 h.p. boat made about 8 miles an hour, the 16 h.p. installation about 9 miles at economical fuel consumption, while the 30 h.p. boat made about half a mile more than the 16 h.p. boat because the motor could not handle a large wheel and the small wheel had so much slip that much power was lost. Every model has a critical speed and above this speed it is not economical to drive her. In a big-bodied boat keep the diameter of the wheel large and if the higher speed engine will permit of keeping the diameter large with the pitch reduced to get the increased revolutions then you'll get the speed increase, but if the higher-powered motor cannot swing the big diameter wheel you will not.

Here is a safe, sane and wholesome cruising boat of a slightly different type than usual. Many requests have been received for a boat with a compromise stern and it is in response to these that this boat has been designed. For a small cruiser this boat embodies every feature which is desirable. The maximum of seaworthiness and speed is attained with a moderate power plant. Many stock marine motors are available which are just right for this little boat.

—EDITOR

Construction of this cruiser is very similar to that of Nomad which was published in our series in February MoToR BoatinG. The instructions given in that issue for laying down the boat and building her were given in such detail that it is unnecessary now to repeat them. Also the MoToR BoatinG Practical Handbooks will prove of great assistance. Any details which puzzle you should be taken up with the editors and designer, who will gladly assist in every way.

Arrangements have been made whereby those desiring full scale blue-prints of the drawings for any of the designs in this series can secure them at nominal cost by addressing F. W. Horenburger, 63 West 184th Street, New York, N. Y.

The specifications cover the boat built with plain finish, but mahogany and brass can be substituted in place of oak and cypress and galvanized hardware if desired. However, brass, unless well lacquered and kept so, must always be given a lot of elbow grease and as few have much time to devote to such exercise galvanized fittings are attractive on this account, that they do away with polishing. But as she's your boat do as you wish and then everybody will be satisfied. So here are the specifications:

Specifications

In General: Plans and specifications are intended to cooperate so that work shown on one and not covered by the other is to be done just as if covered by both. Figured dimensions prevail over scale. Boat shall be built under cover and shall be fully covered by insurance during construction.

Material and Workmanship: All lumber shall be air-dried, free and clear of all damaging loose knots, dry rot, shakes, checks, sap, etc., that would render it unfit for service. All galvanized hardware shall be hot-dipped. Before launching all dirt, shavings, chips, etc., shall be removed from the bilges.

The completed boat shall measure: Length over all, 29 feet, 0 inches; breadth, 8 feet, 8 inches; draft, 2 feet, 8 inches.

Hull

Keel: To be in one piece white oak sided 3 inches, molded as per plan.

Stem: White oak sided 3 inches, molded as per plan, rabbeted for planking, beveled to face ¾ inch and bound with brass half-round. Stem to be reinforced by 3-inch oak apron secured to stem and to keel by ⅜-inch diameter galvanized rivets. White pine stopwaters to be fitted at all seams crossing rabbet.

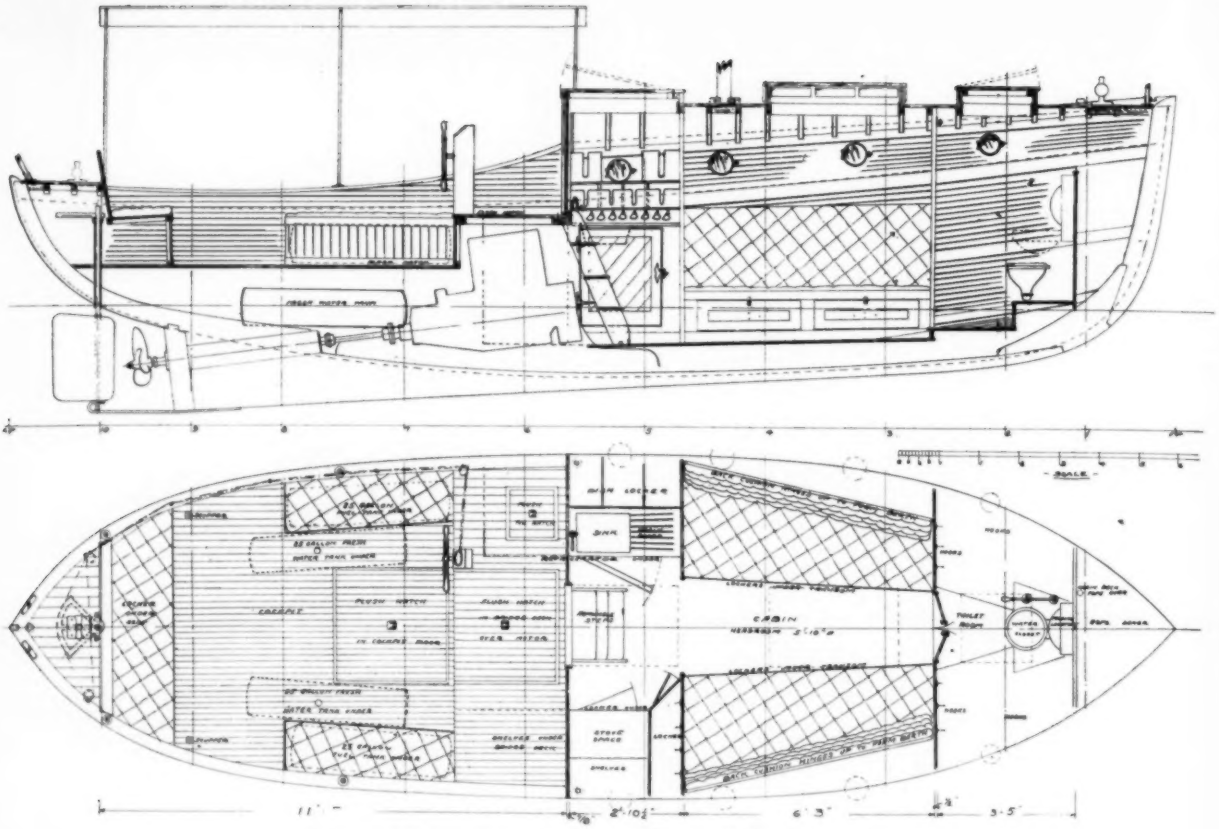
Stern Post: White oak sided 5 inches, molded 6 inches, siding reduced below shaft log to siding of keel. To be fastened by ⅜-inch galvanized rod.

Shaft Log: White oak sided 5 inches, molded 7 inches, bored ¼-inch larger than diameter of shaft used. Fastened to keel by ⅜-inch galvanized drift bolts driven over rings. Care to be taken that bolts clear hole; bolts shown on plan to be driven alternately to port and starboard of hole.

Horn Timber: To be white oak sided 4 inches, molded as per plan, fastened by ⅜-inch bolts (same fastenings as for shaft log). To be rabbeted for planking.

Stern Timber: To be fastened to horn timber by four ⅜-inch galvanized bolts. To be sided 4 inches, molded as per plan.

Joints and Seams: All adjoining surfaces to be laid to-



Inboard profile and arrangement plan for the 29-foot cruiser Tarpon

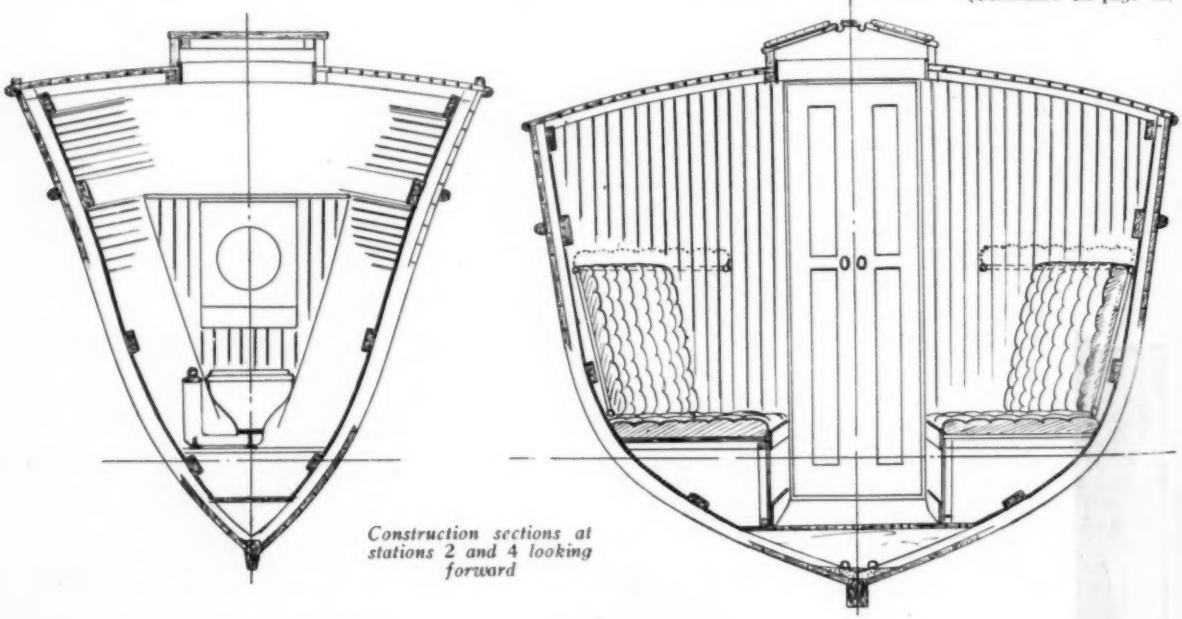
gether with coating of thick white lead between. All seams crossing rabbet to have white pine stopwaters fitted.

Frames: To be straight-grained white oak sided 1¼ inches, molded 1¼ inches, steam bent, spaced 10 inches except as shown. Each frame to be secured to keel by two 2½-inch chisel point galvanized boat nails. Frames in bow to be canted forward at head so as to reduce amount of bevel required, as well as size of frame stock.

Floor Timbers: To be white oak sided 1¼ inches, molded as per plan. Each to be secured to keel by two ⅜-inch galvanized rods and to frames by boat nails. All floor timbers to be bored for 1-inch diameter limbers each side as indicated.

Planking: To be white cedar, yellow pine, cypress, or other suitable material to finish ⅞-inch thick. To be in long strakes laid in widths of about 4 inches with garboard strake about 7 inches wide. Strake at sheer rib-band and garboard strake to be yellow pine in any event. Garboard and hood ends of planking to be fastened by brass screws, heads countersunk and plugged. All other planking to be fastened at each frame with two 2½-inch chisel point galvanized boat nails, heads countersunk and plugged. Nails to be clinched over inside of frames. Seams to be tight on inside, made with slight bevel for caulking outside; to be caulked with yacht cotton, payed with white lead paint and finished flush with white lead putty. Planking to be

(*Continued on page 98*)

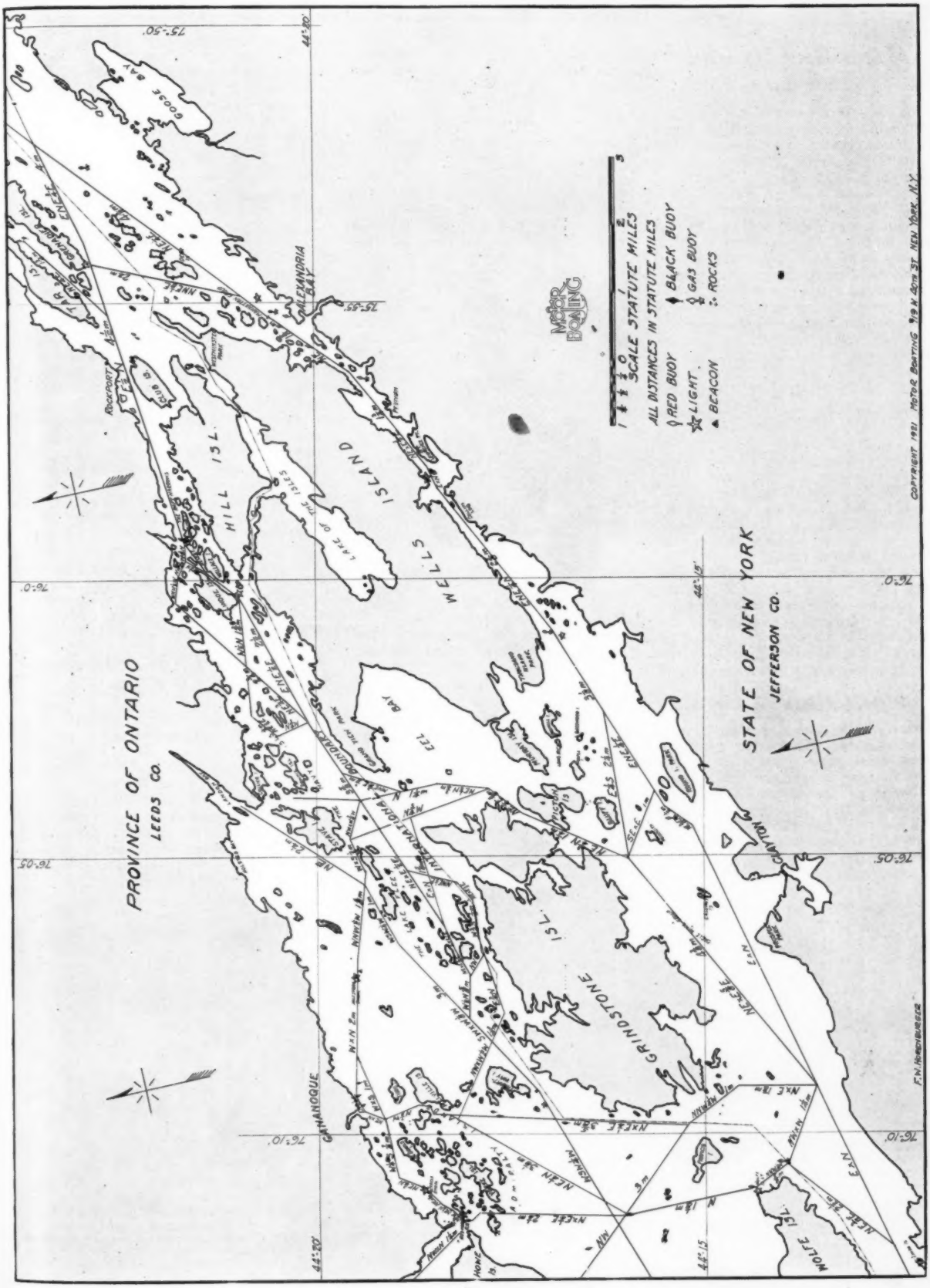


Construction sections at stations 2 and 4 looking forward

Motor Boatmen's Chart No. 24—Thousand Islands

Wolfe to Grenadier Island

Use in Connection with U. S. Lake Survey Charts Nos. 5 and 6, St. Lawrence River



Yard and Shop

Notes of Interest to Both Owner and Manufacturer

Motor Boat Show in February

The show committee of the National Association of Engine and Boat Manufacturers decided at a recent meeting to hold the 17th National Motor Boat, Ship and Engine Exposition in the Grand Central Palace, New York, February 17th to 25th, 1922. The motor boat display will occupy two floors in the Palace building and the industry in all its ramifications will be exhibited. Secretary Ira Hand, who has managed the big motor boat shows held previously, promptly started his arrangements for the new show and is already making reservations for exhibition space.

Sales Tax on Yachts and Motor Boats Reduced

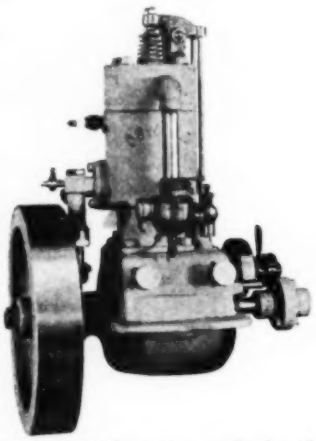
At the last moments of the sessions of the Committee on Ways and Means the new revenue bill was amended so as to exempt boats of not over 32 feet in length and of not more than 5 net tons from the payment of the users tax. A further provision in the amended revenue act is the reduction in the sales tax for yachts and motor boats not designed for trade, fishing, or national defense; and pleasure boats and pleasure canoes if sold for more than $15 to 5 per cent. MoToR BoatinG is glad to be able to report these reductions to its many readers.

Winchester's New Catalog

The Winchester Repeating Arms Company is now distributing a 30-page pocket catalog on guns and ammunition that we believe will fill a long-felt want on the part of those who shoot at the traps and those who seek small and large game in the field. Considerable information in a condensed form is given about all of the rifles, shotguns, paper shot shells and metallic ammunition made by the Winchester organization at its plant in New Haven, Conn.

A New Speedway Motor

The engineers of the Consolidated Shipbuilding Corporation have recently completed the design and construction of a powerful six-cylinder marine motor of 6¾-inch bore and 8½-inch stroke. This machine is designed to run at a speed of 1,300 r.p.m. and will develop 300 h.p. It is an overhead dual valve type with two camshafts. An aluminum bed casting in one piece includes the reverse gear and thrust bearing. All main bearings are in this bed and fitted with removable bronze babbitted shells. The cylinder heads are of cast iron, bolted to cylinder with studs and copper asbestos gasket. All connecting rods are of forged nickel steel the bottom end being fitted with a babbitted bearing, the upper end with a phosphor bronze bushing. Positive pressure system operating through two oil pumps provides ample lubrication. For ignition two separate systems are provided, one a two-spark magneto and the other a Delco distributor. A two-unit electric Bijur starting system is fitted operating on a flywheel ring gear.



A sturdy little motor made by the Oswald Gasoline Motor Company of San Francisco. On a bore and stroke of 4 x 4½ inches 5 h.p. is developed.

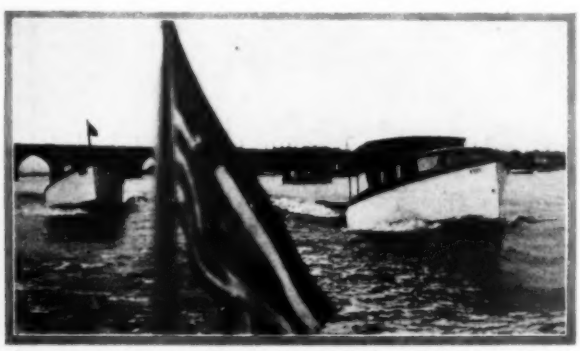
Bear Cat Shown at Chicago

The Belle Isle Boat Company, realizing that high-class motor boats should be brought more directly to the attention of prospective purchasers, recently exhibited one of their popular Bear Cat runabouts in a prominent show window in Chicago during the Pageant of Progress Exposition. Many of the people who stopped to examine this boat had never had an opportunity previously of seeing a real high-class motor boat at close quarters. The exhibit attracted wide attention and the representatives were kept busy answering the many inquiries of the visitors. The boat was shown for two weeks and then placed in the water during the races and was used every day as a committee boat and did its share to make the races successful. The power plant, a four-cylinder Hall-Scott motor, acted perfectly although it had had no previous tests, having been taken directly from the shops and shipped.

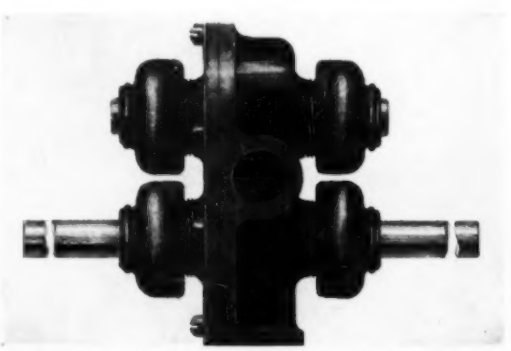
H. E. Rice Joins American Bosch Staff

Announcement is made that H. E. Rice has resigned as commercial manager of the Atwater Kent Mfg. Co. and has joined American Bosch Magneto Corporation as assistant to A. T. Murray, the president. Mr. Rice has had extensive experience in the electrical and engineering field and has conducted much research work in connection with electrical instruments,

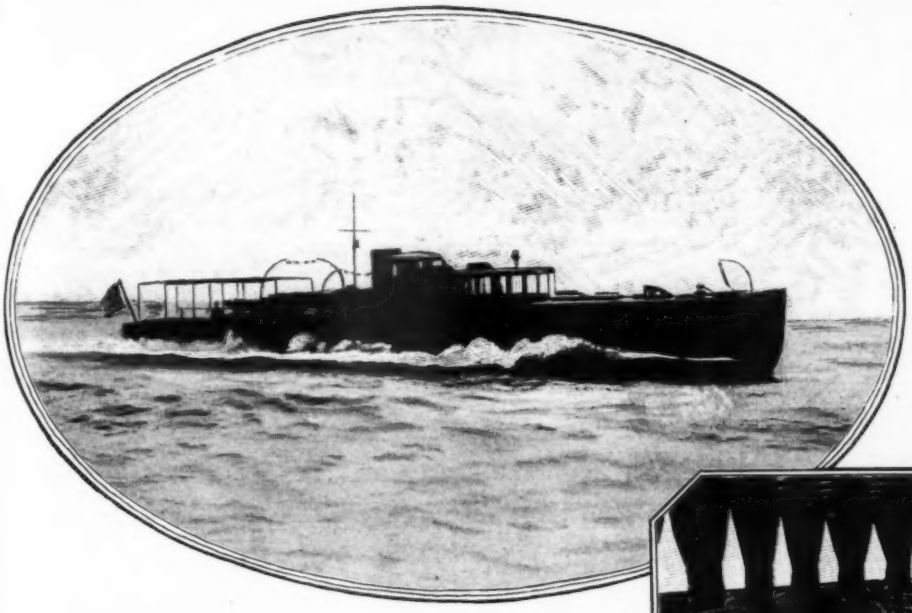
(*Continued on page* 96)



A race among seven Elco cruisettes held at Baltimore recently furnished exciting sport to their owners. All boats were identical, with the same size J. V. B. motor. Elkhorn, owned by E. W. Hughlett, won with an average speed of 12½ m.p.h. There were only 12 seconds between the first and last boat



A new marine motor circulating pump designed particularly for marine engine service by the Arrow Pump Company, Detroit, Mich. It is equipped with self-lubricating packing glands which eliminate all troubles due to leaky glands, scored shafts and worn bearings. Long life of bearings and gears is the result



At the left is the Frances, a 104-foot Express Cruiser, designed and built by The Great Lakes Boat Building Corporation at Milwaukee, Wis. The picture below shows the spaciousness and beauty of her dining salon.

Largest, Fastest, Finest, in Her Class—

EASILY, soundlessly, the Frances cleaves the water at a thirty-mile clip. It was built for the late John F. Dodge of Detroit, and is the largest and fastest gasoline-powered express cruiser afloat. With her 1600 horsepower, 104 foot length, 15 foot beam and 90,000 pounds displacement, this super-cruiser embodies every possible refinement making for speed, luxury and sea-worthiness.

When Mr. Dodge gave the commission to the Great Lakes Boat Building Corporation, they had no precedents whatsoever to guide them. The construction was pioneering work, and represents a splendid achievement.

There *was* a precedent, however, when the question of interior and exterior finish came up. These master boat-builders knew from long experience that there was but one varnish that would be in keeping with the fineness of the craft. They knew that there was but one varnish that will stand up under all kinds of weather, that is proof against oil, gasoline, and the sharp, constant drive of spray.

So, without hesitation, they specified—*Valspar,—of course!*

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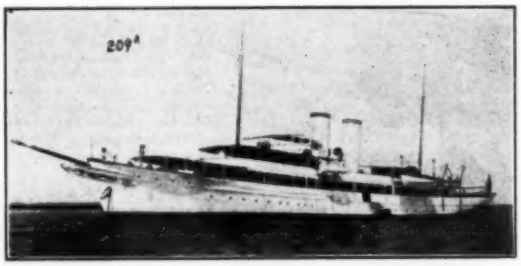
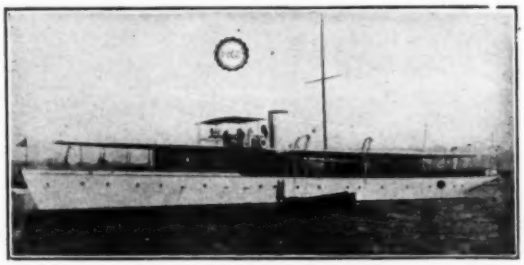
NAVAL ARCHITECTS—MARINE INSURANCE—YACHT BROKERS

15 WILLIAM STREET, NEW YORK

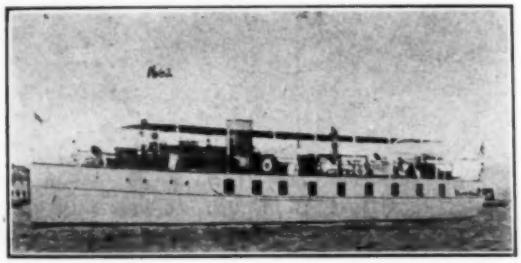
Complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



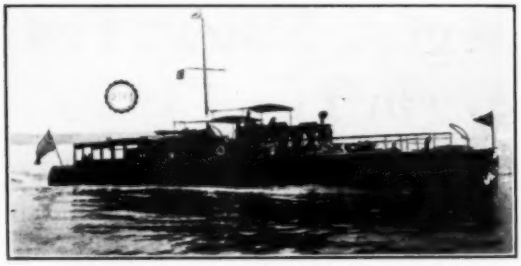
No. 209—For Sale or Charter—Large seagoing steam yacht. Exceptional speed. Roomy accommodation. Completely reconditioned recently. Unusual opportunity. Cox & Stevens, 15 William Street, New York.



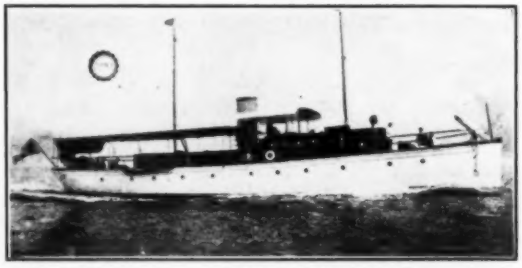
No. 1466—For Sale or Charter—Particularly desirable 140 ft. twin-screw steel cruising power yacht. Speed up to 18 miles. Dining saloon and social hall on deck; 3 double and 1 single staterooms, 3 bath and toilet rooms, etc. Recently overhauled thoroughly at large expense. Cox & Stevens, 15 William Street, New York.



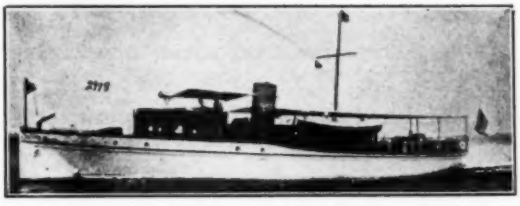
No. 1662—For Sale or Charter—Attractive 90 ft. twin-screw gasoline houseboat; speed 10-12 miles. Large saloon, four staterooms, two bathrooms; all conveniences. Handsomely furnished. Cox & Stevens, 15 William Street, New York.



No. 3789—For Sale: Most desirable high speed twin-screw power yacht available. Approximately 88 ft. long. Speed up to 25 miles. Double stateroom, main and dining saloons, bath and toilet room, etc. Large cockpit. Mahogany hull. Price attractive. Cox & Stevens, 15 William St., New York.



No. 3489—For Sale or Charter—Modern twin-screw power yacht, 90 x 16.3 x 5.2 ft. draught. Speed up to 15 miles; two 115 H.P. Winton motors. Dining saloon in deckhouse forward; two double and one single staterooms; bathroom and two toilets, galley, etc. Unusually large deck space. Price and further particulars from Cox & Stevens, 15 William St., New York.



No. 2978—For Sale—Desirable twin-screw cruising power yacht; 80 x 14 x 4 ft. Speed 13 miles; two 50-60 H.P. Twentieth Century motors new 1919. Dining saloon, two double staterooms, bathroom and two toilets, galley, etc. Recently thoroughly overhauled at large expense. Cox & Stevens, 15 William Street, New York.

No. 3151—For Sale or Charter—Particularly desirable twin-screw houseboat; 77 x 17.6 x 3 ft. Speed 11 miles; two 6 cyl. 60-70 H.P. Standard motors new 1919. Large deckhouse containing social hall; main saloon, two double and two single staterooms, two bath and toilet rooms, etc. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York.

No. 3477—For Sale—Fast bridge deck cruiser; 43 x 9 x 3.6 ft. Speed up to 17 miles; 130-150 H.P. 6 cyl. Speedway Motor. Saloon, double stateroom, two toilets, galley, etc. Splendid boat for ferry or day service. Price low. Cox & Stevens, 15 William Street, New York.

No. 2714—For Sale—Cruising power yacht; 62 x 11.6 x 3.9 ft. Speed 11 miles. 40-60 H.P. motor. Two saloons each with two berths. Double stateroom, bath and toilet room. Handsomely finished. Bargain for quick sale. Cox & Stevens, 15 William Street, New York.

Advertising Index will be found on page 110

NAVAL ARCHITECTS
ENGINEERS
YACHT BROKERS
MARINE INSURANCE

HENRY J. GIELOW, Inc.

25 WEST 43rd STREET, NEW YORK

Tel.: Murray Hill 9134
Cable Address:
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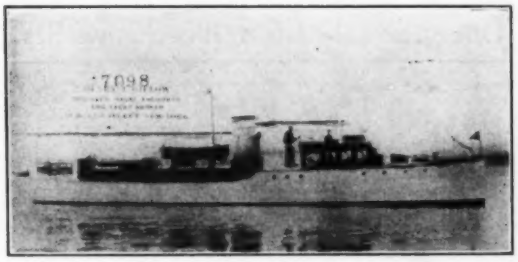
A.B.C. Code

Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.

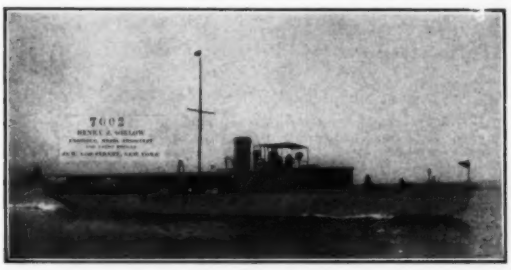
We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat upon request.

No. 8165—For Sale—Consider 50-60 ft. auxiliary part payment. New houseboat 45 x 13 x 3 ft. Speed 9 miles. In commission. Double and single stateroom, saloon and bath. Also deck saloon. Delco lighting plant. All complete and perfect condition. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.

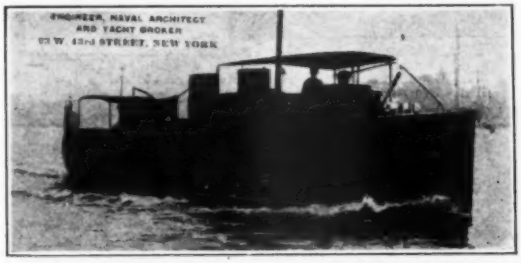


No. 7098—For Sale—Bargain modern 72 ft. Lawley built twin-screw motor yacht of recent build. Speed 12 to 14 knots; two 6 cyl. 150 H.P. Winton motors. Two double staterooms, bathroom and two toilets. Deck dining saloon. Owner anxious to sell. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.

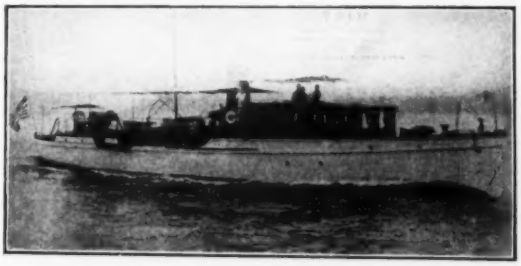
No. 8080—For Sale—Charter—New modern 85 ft. twin-screw cruising houseboat. Deck dining saloon and galley. 2 double, 3 single staterooms. Hot water heat, 3 baths. Shoal draught makes attractive type Florida cruising. Two 50 horsepower motors give speed 10 miles. Good sea boat. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



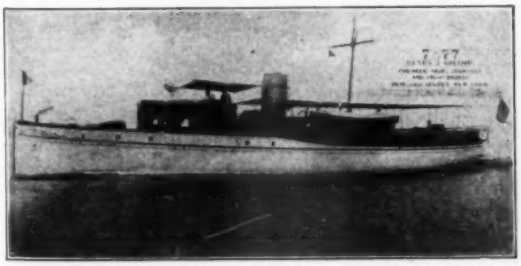
No. 7002—For Sale or Charter—Finest yacht of type available. 138 ft. twin-screw power yacht. Two 300 H.P. Standard engines. Dining room and social hall on deck; three double and one single staterooms; two bathrooms. All furnishings new 1920. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



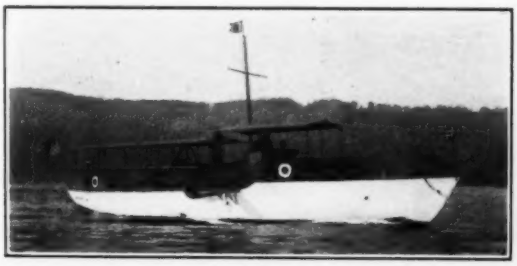
No. 7133—68-ft. raised deck cruiser, overhauled and reconditioned spring 1921. Sterling engine, speed 12 to 14 miles. Interior finish white enamel, two double staterooms, large galley, shower. Exceptionally heavily constructed boat, fine sea boat. Owner anxious to sell, having purchased larger yacht. Will consider real estate trade. Inspection and trial trip in New York. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.



No. 7040—For Sale—Bargain—Modern Lawley built 96 ft. twin-screw motor yacht. 15 ft. beam. Standard motors. Speed 11 miles. Deck dining saloon, 2 double staterooms. Accommodate seven. Economical, can run with 4 crew. Able sea boat. Furnishings new 1919, includes player piano. Large bridge and good deck space. Fine condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 7077—For Sale—Particularly desirable 80-foot twin-screw power yacht. "20th Century" 50-60 H.P. motors, new 1919. Deck dining room, two double staterooms, bathroom. All furnishings and equipment new 1919. Excellent condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 7376—For Sale—61 foot cruising power yacht. Speed 12 miles, 80 H.P. motor new 1920. Delco lighting plant new 1921. Double stateroom, two saloons. Sleeps six. All in first class condition. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.

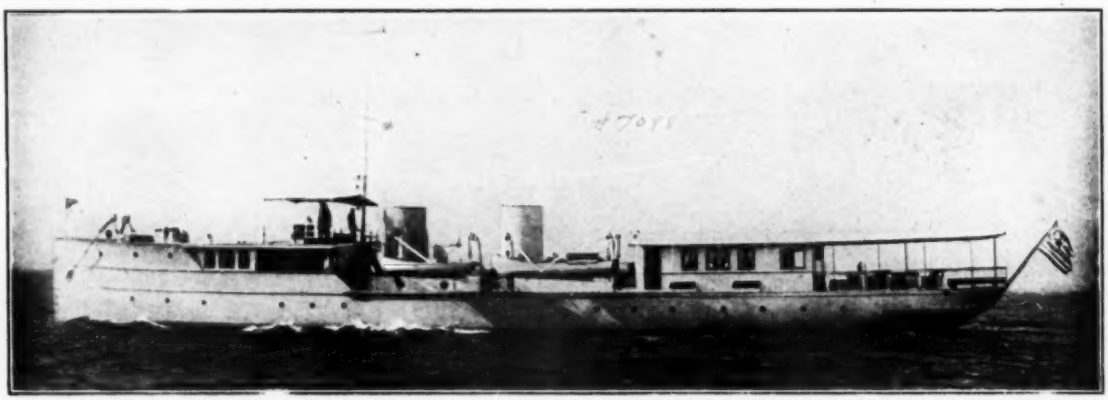
TAMS, LEMOINE & CRANE

NAVAL ARCHITECTS AND YACHT BROKERS

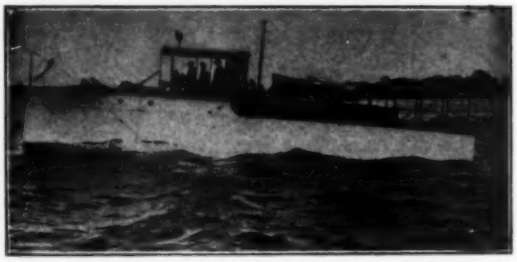
Telephone 4510 John

52 Pine Street New York City

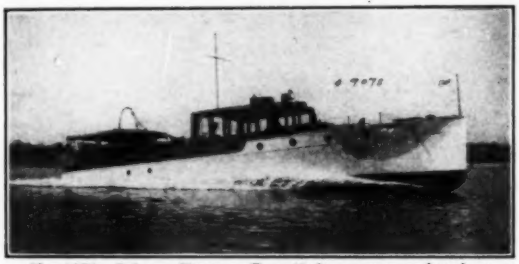
Offer for sale the following yachts, some of which are available for charter



No. 7098—Unusual opportunity to purchase the largest cruising steel motor yacht afloat—140 ft. overall—19 ft. 6 in. beam—6 ft. 6 in. draft. Designed by Tams, Lemoine & Crane and built by Lawley. An exceptionally able yacht. Triple screw having three 6 cylinder. Speedway motors. Gasoline consumption low. Speed 16 miles per hour. Large cruising radius. Has very commodious owners' quarters attractively fitted and furnished. In absolutely A-1 shape throughout.

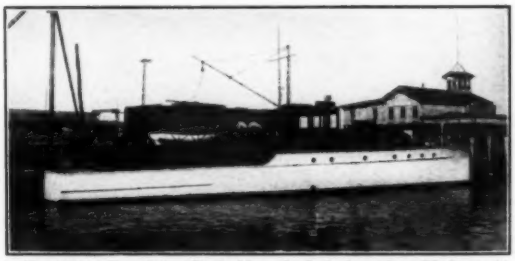


No. 7474—Sale—Brand new fast cruiser; 2-6 cylinder Sterling motors. Speed 21½ miles. All modern conveniences.



No. 9078—Sale or Charter—Fast 48 ft. express cruiser in commission. Immediate delivery—2 new 6 cylinder Van Blerck motors. Good accommodations. Thoroughly overhauled last year in all departments.

No. 8102—Sale—Charter, most desirable raised deck cruiser available. Practically new. 81 ft. x 13 ft. x 5 ft. draft. Speed 15 miles. Electric light, hot water, heat and refrigerating plant.



No. 9075—For Sale—Desirable raised deck cruiser 70 ft. x 11 ft. x 4 ft. Good accommodations. Speed 23 miles.

No. 8978—For Sale—Raised deck semi day cruiser. 200 H.P. Sterling motor. Speed 20 miles per hour. In the very best of condition. Price reasonable. Full particulars and plans from Tams, Lemoine & Crane, 52 Pine Street, New York.

No. 1927—Sale—Charter—Very desirable, twin screw houseboat; 5 staterooms, 3 bathrooms, dining saloon, lighted by electricity and hot water heat.

Advertising Index will be found on page 110

HENRY H. JENNINGS HERMAN JAGLE

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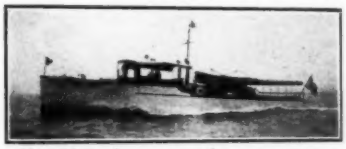
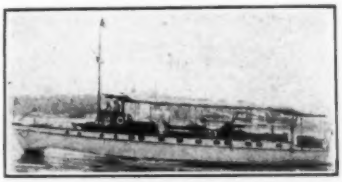


No. 2268—An opportunity to secure a high class 58 foot express cruiser, 3 foot draft. Ideal boat for Florida. Built this year. Double stateroom. Main saloon two upper and two lower berths. Sleeps eight. Two toilet rooms. Two 150 H.P. Van Blerck Motors. Speed 24 miles.

No. 2254—Sale or charter 55 foot cruiser. Two double staterooms. Two upper and two lower berths in main cabin. Two toilet rooms. 100 H.P. Sterling Motor. Speed 13-14 miles. Electric lights. Splendid proposition.

No. 2136—Sale or Charter—Twin-screw 80 foot power yacht. Two double staterooms, dining saloon, etc. Two 220 H.P. Standard motors. Speed up to 21 miles.



No. 1114—70 foot twin-screw power yacht. Three staterooms, large main saloon. Sleeps eight. Two toilet rooms. Two 32-37 H.P. Standard Motors installed 1920. Speed 11-12 miles. Electric lights, etc. Ideal for Florida cruising.

No. 4322—Sale or Charter—Twin-screw 85 foot power houseboat. Five staterooms, dining saloon, three baths, etc. Speed 10 miles.

No. 2011—52 foot bridge deck cruiser. Double stateroom, main cabin, two toilet rooms. Two berths and toilet for crew. 130-150 H.P. Speedway Motor. Speed 15 miles.

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YACHT AGENT and SHIP BROKER

TELEPHONE WHITEHALL 1170 1171

CABLE ADDRESS WINDWARD, N. Y.

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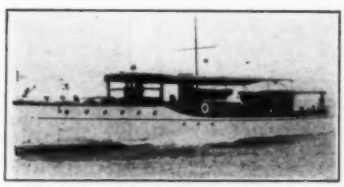
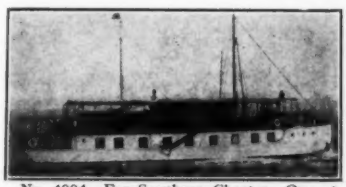
OFFICE NO. 1051

SALES AND CHARTERS—NAVAL ARCHITECTURE—MARINE INSURANCE

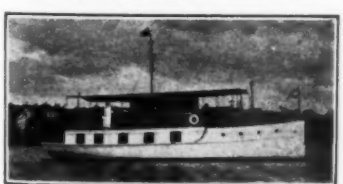
No. 1236—200 ft. steel sea going steam yacht. Best design and build. A-1 condition throughout. Oil burning. One of the finest vessels in the fleet. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 1986—88 ft. power yacht. Twin screw. Good speed. Exceptional opportunity. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York City.

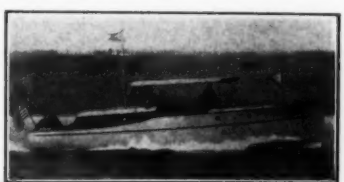


No. 4084—For Southern Charter—One of the Mathis 75 ft. Power House Yachts. Exceptional accommodations. Standard Motors. In commission. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 1638—For Sale or for Southern Charter—52 ft. Power House Yacht—last year's build—fine accommodations—a most desirable type. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

No. 1071—60 ft. express cruiser. V bottom. Twin screw. Speed up to 27 miles. (Low price.) Frank Bowne Jones, Yacht Agent, 25 Broadway, New York City.



No. 1852—43 ft. Speedway Scout Cruiser—6 cylinder engine—speed 14 miles—good as new. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

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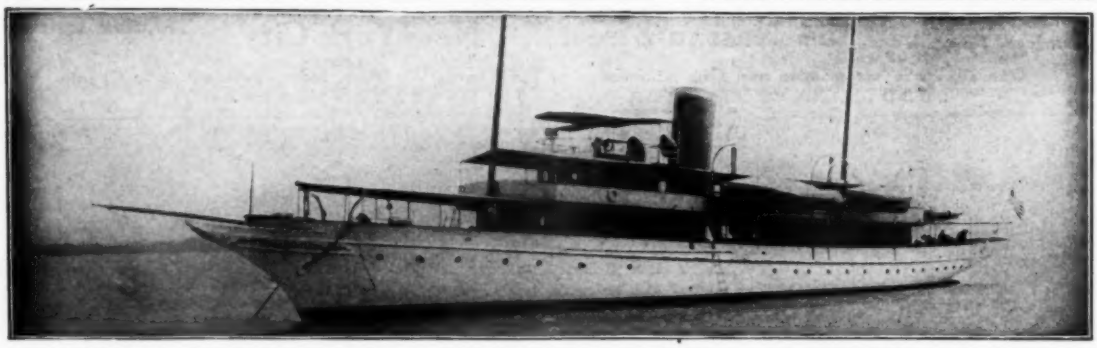
Yachting, N. Y.

We have a complete list of Yachts of every description for sale and charter

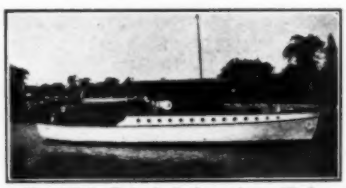
Plans, Photos and full particulars furnished on request.



No. 659—Steel steam yacht, deep sea type, 187 x 24 x 10 ft. Of best construction throughout, and of recent build from our designs. Promenade deck full width of boat. Has two large deck houses, with chart house and Captain's room on upper deck. Finely appointed owner's and guests' quarters. Was not used in Government Service. In best possible condition and should be seen to be fully appreciated. Inspection invited.

No. 2438—Handsome Express Cruiser, 87 x 12.2 ft.; mahogany planking; two 8 cylinder Speedway motors, speed 20-25 miles. Built under our supervision.

No. 2345—Patrol type. Twin-screw express cruiser, 60 x 10. Two 6 cylinder motors. Speed 25 knots. Very reasonable figure.



No. 1614—Raised deck cruiser, 57 ft. x 13 ft., Twentieth Century motor, 50 H.P. Three staterooms, saloon, etc. A1 condition.

Telephone Vanderbilt 10499

Suite 401

R. M. HADDOCK

Marine Insurance

NAVAL ARCHITECT and YACHT BROKER

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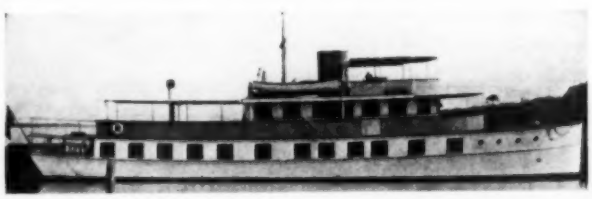
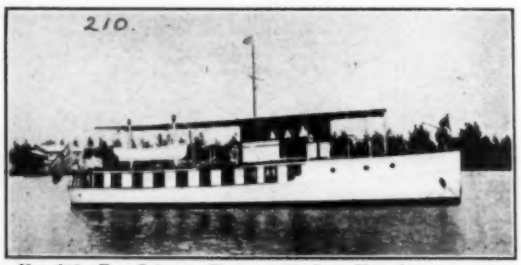
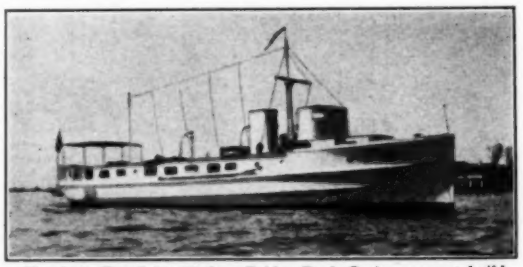


No. 215—For Sale or Charter: Attractive 98 foot Houseboat built in 1919 for Florida Waters where she is now located. Has four single and two double staterooms, bath, double deck saloon, etc. 125 H.P. Murray & Tregurtha engine. Economical on gas, nine miles on eight gallons. Apply for particulars to R. M. Haddock, 50 East 42nd St., New York City.

No. 116-S—For Sale—100 ft. steam yacht. A very able and seaworthy boat. Sleeps 7 in owner's quarters. Speed 12 to 14 knots. I.H.P. 325. For further information apply to R. M. Haddock, 50 East 42nd St., New York City.



No. 210—For Sale or Charter: 63 foot Houseboat, now in Florida Waters. 16 ft. beam, 3 ft. 6 in. draft. Two 50 H.P. 20th Century engines. One double and two single staterooms, bath, toilet, etc. Boat in fine condition. R. M. Haddock, 50 East 42nd St., New York City.



No. 316—For Sale: 59 foot Bridge Deck Cruiser, recent build. 70-90 H.P. Sterling engine 1917. A very able boat, economical to run. Price very reasonable. Apply R. M. Haddock, 50 East 42nd St., New York City.

Advertising Index will be found on page 110

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Yachtsan, N. Y.

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YACHT BROKER
501 Fifth Avenue, (42nd St.) New York

Yacht Appraiser
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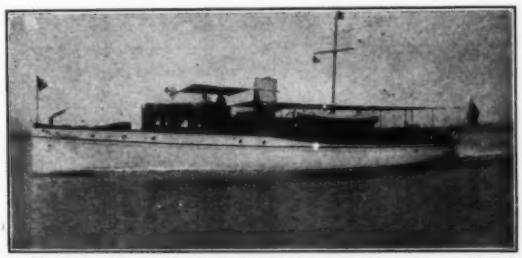
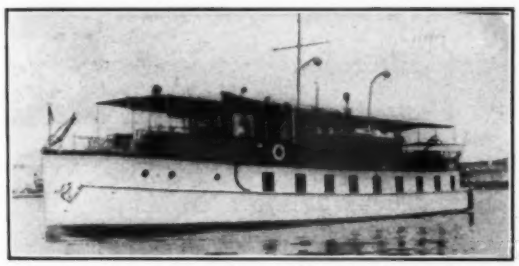
Should you desire to
Buy **Sell** **Charter** or **Insure**
Communicate with this office. Personal attention, prompt service and a complete list of desirable yachts of all types offered.

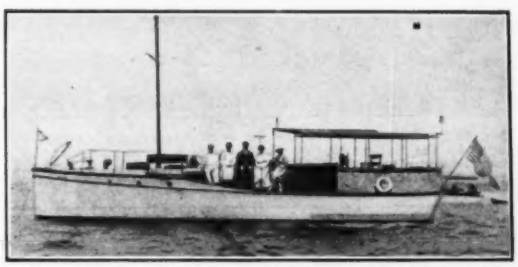
No. 3—For Sale—36 ft. mahogany runabout, speed 35 miles. Very fine looking craft and has had excellent care.



No. 1034—For Sale—Desirable 80 ft. twin-screw cruiser. Speed 14 miles. 2 double staterooms, dining saloon, bath, etc. A wonderful sea boat.

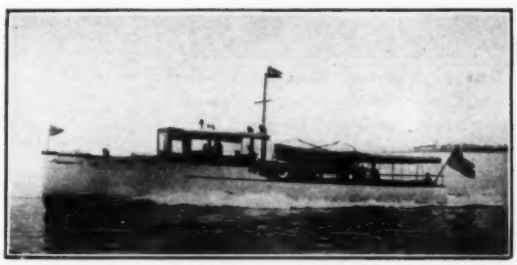


No. 1197—For Sale or Charter—Unusually fine 80 ft. twin-screw houseboat. 4 double staterooms and saloon, baths, etc.

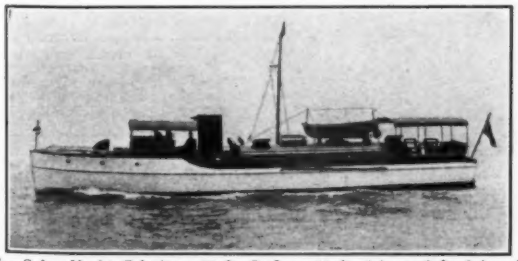


No. 1015—For Sale—43 ft. cruiser, 1 double stateroom and saloon. Speed 14 miles. Excellent condition.

All Sizes Rebuilt Marine engines from one to 300 H.P. 4 cyl. 4 cycle GLOBE 10 x 14", reverse gear, magneto, 48" propeller, $6,000.00. Pair STANDARD 300 H.P. 12 x 14" reversible, cost $25,000.00 each, price $4,000 each. Many other large and small four cycle and two cycle engines, for work boats, yacht, cruiser or tender. Write for list.
Hamilton Marine Engine Exchange 440 Fifty-Second St. Brooklyn, New York



No. 4100—For Sale—In Commission—Practically new high speed twin-screw power cruiser; 58 x 11.7 x 3 ft. Speed up to 24 miles; two six cylinder Van Blerck motors; one man control from semi-enclosed bridge deck. Well adapted for Florida waters. Best construction; excellent internal lay-out. Accommodations include saloon with two transoms and separate toilet room forward, followed by galley full width of boat; unusually good crew quarters and engine room amidships; next aft owner's stateroom with toilet room, wardrobe, etc. Large cockpit aft. Has proven thoroughly successful and unusually able seaboat. Comprises maximum dimensions in high speed cruiser capable of operating with two men in crew. Handsomely finished and furnished. Attractive figure will be accepted if sold before laying up. For further particulars, plans, etc., apply to Cox & Stevens, 15 William St., New York. Telephone 1924 Broad.



For Sale—Yacht Celeritus, 61 ft. O. L. x 11 ft. 6 in. x 3 ft. 9 in. Designed by Swesey. Built by Jacobs 1916. Redesigned 1919. Motors overhauled 1920. Power plant, two Sterling eight cylinders 150/200 H.P. each. New power dingey built 1920. Perfect order. Complete inventory. Price low. Apply Oliver, 417 Canal Street, New York.

Photo by Edwin Levick

READY FOR IMMEDIATE SHIPMENT SOUTH

For Sale—35 x 6 ft. 6 in. Hacker Runabout "SNAPSHOT," GR-6 Sterling Engine, guaranteed speed 35 M.P.H. Solid mahogany and salt water fittings throughout and completely equipped with cushions, chairs, windshields, etc. In perfect order and completely refinished. Only reason for selling want faster boat. Act quickly before Detroit River freezes. John W. Stroh, 909 East Elizabeth Street, Detroit, Michigan.

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Terms: Cash with order.

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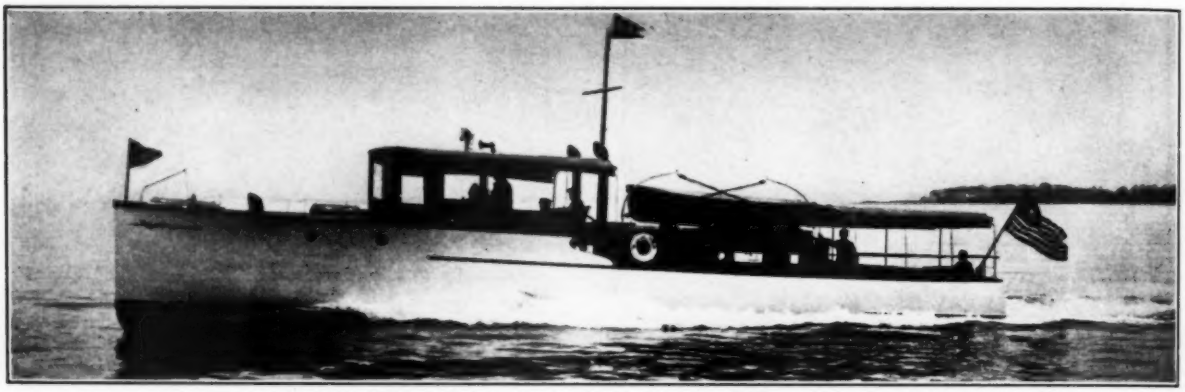
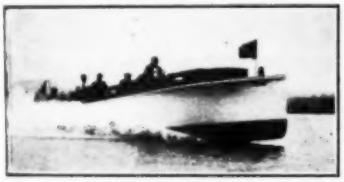
Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



No. 4317—For Sale—Probably the finest express cruiser that has been built. Dimensions—Length 58 ft.; Beam 11 ft. 7 in.; Draft 3 ft. Designed and built by the Luders Marine Construction Company last Spring. Twin-Screw—6 cylinder Van Blerck Motors. Speed up to 24 miles per hour. Sleeping accommodations for six besides crew. Commodious cockpit, protected bridge and deck control. Beautiful furnishings and best equipment throughout. Yacht is better than new. Is excellent sea boat. For sale for private reasons. Full particulars from Frank Bowne Jones, Agent. Cunard Building, 25 Broadway, New York.



For Sale or Charter: Beautiful 45-foot Express Cruiser with galley equipment, sleeping accommodations for six, Liberty 400 H. P. motor, speed 33 M. P. H. Inquire box 28, MoToR BoatinG.

For Sale—Cabin cruiser, ocean going, flush deck 52 x 12, 4, heavy duty Standard engine, two lavatories, two cabins, mahogany trim, attractively furnished, one man control, $4,500. Canadian Money. A. E. Paradine, 38 Munro Park Ave., Toronto, Canada.

Wanted—Power houseboat or good cruiser, 40 or 45 ft., good beam shoal draft. Send photograph and full particulars. Capt. Byers, 613 Sewell Avenue, Atlantic City, N. J.

Koban 3 H.P. Outboard Motor, Magneto model and underwater exhaust, has only had four weeks actual use. Nicely broken in and runs fine. In special shipping case. $75 cash or deposit. F. Arisman, 4719 Indiana Ave., Chicago, Ill.

Small fast Watercar cruiser, like new, at a bargain.

Special low prices on fall orders for fast V-bottom runabouts and cruisers, hulls only or complete. Bronx Boat Works, foot Willow Ave., (near E. 132nd St.) N. Y.

FOR SALE—Brand new round bottom raised deck hull 28 ft. x 8. H. Duryee, Mattituck, N. Y.

For Sale—Raised deck cruiser, 40 ft. by 9 ft. 6 in. by 3 ft. 6 in. Standard 23-27 Heavy Duty Motor. First class condition throughout. Spacious cabins. Fully equipped for cruising. Now in commission on Great Lakes. Price reasonable for immediate sale. Box 10, MoToR BoatinG.

TRIMOUNT WHISTLE BLOWER OUTFITS	TRIMOUNT ROTARY HAND BILGE PUMPS
Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.	All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
Made in 3 sizes.	Made in 3 sizes.

TRIMOUNT ROTARY POWER CO.
20 Heath Street Boston, Mass.
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Auto Motor Supplies—Buick—Michigan—Stoddard Dayton—Cadillac—Overland—E.M.F. Continental and Buda Motors, all types $50 each and up. Special high tension 2 and 4 cylinder Magnetos $9.50 each. Electric and Gas Head Lamps—Coils—Carburetors—Air Compressors—Generators—Starters, etc. Write for late catalogue. Address Motor Sales Dep't. B, West End, Pittsburgh, Pa.

FREE Illustrated Literatures. Outboards, New and Rebuilt Engines. Universal Joints. Pumps. Clutches, Gears, Aerials, Hyde's, Gordon Reversible Propellers, etc. Canadian Boat & Engine Exchange, Toronto.

For sale cheap to clear stock—one brand new Matthews 32 volt Marine Electric Lighting Plant—Model H-20 light Full-Automatic; also one 50-light size Land type. Widger & Miller Company, 141 Milk Street, Boston, Mass.—Matthews Dealers.

"Three Kermath 12 H.P. 4-cylinder engines without reverse gear. Magneto equipped, absolutely first class condition. Factory overhauled, refinished. Guaranteed for one year, $150.00 each. 2nd Hand reverse gears to fit same with coupling, $20.00." Kermath Manufacturing Company, Detroit, Michigan.

Special Offer—For a limited time we are making attractively low prices on our two smallest size engines, Model L40 and L41, four-cylinder. 17 H.P. and 22 H.P. respectively. Write us for latest proposition on these engines or communicate with our nearest distributor. Fay & Bowen Engine Co., Geneva, N. Y.

For Sale or Charter—Cabin cruiser 50 ft. x 13 ft. x 3 ft. 6 in. Sleeps 6 persons. Electric light, Standard engine. Fine boat for Florida cruising. Captain C. Roland, 648 54th St., Brooklyn, N. Y.

One cyl.	
2HP Detroit	$25.00
5HP Termaat-Monahan	45.00
3½HP Roberts	40.00
7HP Williams	65.00
10HP Gray	70.00
Two cyl.	
4HP Dunn	$45.00
6HP Ferro	95.00
8HP Dunn	75.00
7HP Eagle	75.00
10HP Milwaukee	90.00
12HP Mack	65.00
10HP Miller	75.00
12HP Campbell	115.00
15HP Ferro	85.00
12HP Straubel 3 cyl.	145.00
12HP Continental, 4 cyl.	115.00
16HP Dunn, 4 cyl.	135.00
18HP Fairbanks, 3 cyl.	165.00
24HP Dunn, 6 cyl.	195.00
40HP Doman, 4 cyl., 6 x 6	375.00
45HP Buffalo, 7 x 9, 4 cyl.	1050.00
150HP Aeromotor, 8 cyl. air cooled V type	285.00

Send for free book 500 motors.
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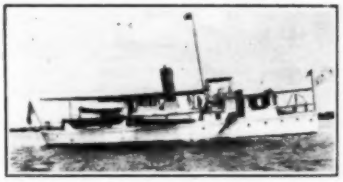

No. 8173—For Sale—Twin-screw steam houseboat 80 ft. x 18 ft. x 3 ft. 6 in. Four single staterooms and bathrooms. Sleeps seven. Hot and cold running water. Boiler retubed 1920, also engine overhauled. Underbody coppered to waterline. Now hauled out, and inspectable Florida. Henry J. Gielow, 25 W. 43rd Street, New York City.

Clean up Sale — Rebuilt Marine Engines

24	H.P.	4	Cylinder	4 Cycle	Anderson	$500
18	"	3	"	4 "	"	450
25	"	4	"	4 "	Special	275
6½	"	1	"	4 "	Anderson	200
4	"	1	"	4 "	"	135
50	"	6	"	2 "	Fay & Bowen.	250
16	"	2	"	2 "	Kahlenberg	150
15	"	2	"	2 "	Fay & Bowen.	100
15	"	2	"	2 "	Wolverine	90
12	"	2	"	2 "	Pierce Racine	75
4½	x 4½	2	"	Horizontal Opposed		100
4	x 4	2	"	"	Air Cooled	75
6	x 6	1	"	"	Steam	75

45 Amp. 110 Volt Roth Brothers Generator.. 100
All engines guaranteed and shipped on approval. Anderson Engine Company, 4032 N. Rockwell St., Chicago.

KERMATH MOTORS—WE WILL TAKE ANY MOTOR IN TRADE ON A NEW KERMATH. GET OUR SECOND HAND LIST. KERMATH MFG. COMPANY. (Detroit, Mich.)

I have a few pair of Bausch & Lomb 6 x 30 power, prism binoculars and will sell them for about one-half of the regular price—this is a wonderful opportunity for yachtsmen to get a good pair of glasses. Percy M. Child, 1110-14th St., N.W., Washington, D. C.

For Sale: 1. 2KW Carlisle & Finch direct connected lighting plant, and 1, 5 KW Winton direct connected plant; also 1-18 in. and 1-14 in. Rushmore searchlight and one 9 in. all brass-stand deck type yacht searchlight, and a few 150 lb. mushroom anchor. Percy M. Child, 1110-14th St., N.W., Washington, D. C.

WANTED

"Everybodys' Cruiser" (dory) perfect condition, for cash. Write particulars. L. F., 86 34th St., Brooklyn, N. Y.

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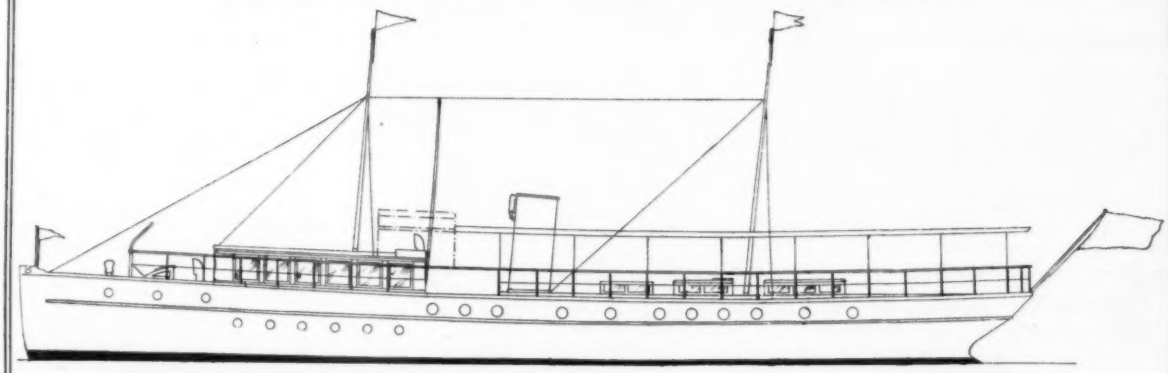
FOR SALE

99 Foot Motor Yacht "ESLOMA"

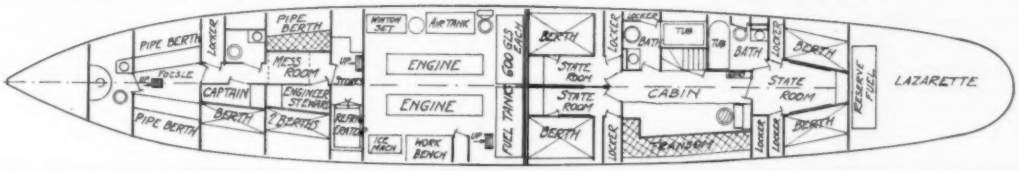


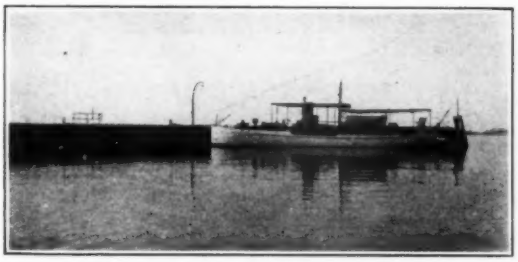
Designed and built in 1920 by Herreshoff Mfg. Co. Cruising Radius 1200 Miles, Cruising Speed, 12 M.P.H., Max. 15. Three double staterooms, 2 baths for Owner and Guests. Wood construction. Now complete at Bristol, R. I. Never in the water.

Write or Wire for Full Details from Your Broker, or

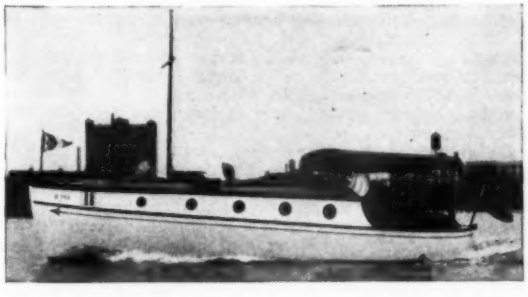
J. C. BRENNAN

STATE BANK BUILDING
EAST MOLINE, ILL.

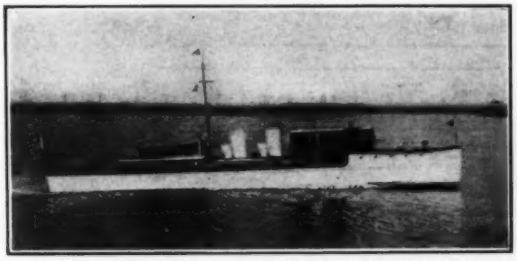




No. 7763—For Sale—Attractive cruising power yacht 64 ft. x 11 ft. 11 in. x 4 ft. 6 in. 50-60 H.P. Sterling motor. Speed 12 miles. Motor controls from bridge. Double stateroom, also large main cabin. Sleeps 5 persons. Large deck space, all in first class condition. Henry J. Gielow, Inc., 25 W. 43rd Street, N. Y. City.



For Sale—Handley-built 33 ft. x 8 ft. 8 in. x 3 ft. Raised Deck Cruiser. MILLER engine, 4-cylinder, new 1921. Speed 9 miles. Very fully found and in A-1 condition. Price $2,500, or trade for larger bridge deck cruiser. R. W. Hanke, 1052 Main Street, Bridgeport, Conn.



No. 3846—For Sale—(In Commission)—Particularly desirable, twin-screw, high speed cruiser; 73 x 12 x 3.4 ft. Speed up to twenty-four miles; two 6 cylinder 300 H.P. Model K. Murray & Tregurtha Motors (new 1920). Independent Lighting Plant. Accommodations include double stateroom forward; saloon aft with two berths; transom in deck-house. Handsomely finished in mahogany; best construction; double planking of mahogany; copper fastenings. Ideal boat for Southern waters. Price attractive. Apply to Cox & Stevens, 15 William Street, New York. Telephone Broad 1924.

New cruiser NAMID, Hacker design, 40 ft. x 9 ft. Kermath 40. Speed 12 miles. Mahogany finish; finest possible construction throughout. Splendid design for Florida fishing. Price $7500.00 Inspectable Detroit. Kermath Mfg. Co., Detroit, Mich.

CHANCE TO CRUISE SOUTH at small expense. Owner of 100 ft. Gasoline Yacht will take four or five congenial people for winter cruise on cooperative plan. 2,000 mile cruising radius. Can be handled by three men. Ready to start from New York now. For particulars address Box 47, MoToR BoatinG.

Wanted—Modern V-Bottom Day Cruiser, for ferry service, about 30 to 33 feet long, with full equipment. Speed 16 to 20 miles per hour. Price in Canadian Funds in water of f. o. b. cars, Toronto, Canada, ready to run. Box 32, MoToR BoatinG.

Hacker design 26 x 5½ ft. mahogany runabout, natural finish. Hall-Scott four cylinder, 100 H.P. motor, electric self-starter. Only used six weeks on fresh water lake. Seats six to eight comfortably. Guaranteed speed thirty miles per hour; will do better. Full equipment. Asking $3000.00. Will consider cash offer. Must sell. Cannot de duplicated for $5000.00. For full description write Jay A. Mellish, St. Hubert Hotel, 120 West 57th Street, New York City.

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POWER—SAIL—AUXILIARY
Twenty-five years' practical experience
350 Madison Avenue New York City

Mooring To An Endless Line

(*Continued from page* 34)

less than 3 inches from the ends of the timber, and bolts should be placed in the ends as shown in detail of flared hole, as a reinforcement. Paint the float with a good copper paint, and cover this with a white luminous paint for picking up your mooring easily at night.

Sizes and weights throughout this outfit should be decided upon according to character of boat and conditions at the mooring. In good holding ground an anchor of the weight ordinarily used with the boat will give a very wide and comforting margin of safety, for the reason that the strains are taken both by the anchor and the stake on shore. If conditions permit, the distance from anchor to float plus that from float to ring when the boat is hauled off, should be the same as the distance from ring to stake, thus as nearly as possible equalizing the strain. For the most efficient action, the mooring should be put out as nearly as possible at right angles to the prevailing winds.

Length of rope from anchor to float should be adjusted according to depth of water, strength of heaviest winds, and range of tides, exactly as in ordinary anchoring. The cross-piece of the float should be at the surface at all times—otherwise the float may turn over and twist the shore rope, particularly if your anchorage experiences strong tidal currents.

Points of difference in detail will suggest themselves to individual owners; such, for instance, as a heavy weight of stone or other material in place of the anchor, and a galvanized pulley in place of the hole in the shoreward end of the float. It is a good plan when taking up the mooring for the winter to immerse the ropes in boiling water for a few minutes, in order to kill off organic matter which would otherwise hasten its decay.

B. W. V., Berkeley, Cal.

Scraping Is Certain

(*Continued from page* 33)

other less common chemicals such as aniline oil.

These materials dissolve the oxidized (gummy) oil or varnish by which the deposits are held together, and which are not soluble in gasoline or kerosene. When the engine is run the dissolved oil and its solvent are burned and the loosened carbon expelled through the exhaust.

To secure the best results spray in the carbon remover so that it reaches all parts. Do this preferably when the engine is warm. Let it stand as long as possible, then run the engine under load with the leanest possible mixture. This will usually carry off much of the deposit, but, where this is heavy and baked on hard, several applications may be necessary.

Other methods for carbon removal are burning with oxygen and breaking it loose with the so-called carbon chain. Neither is to be recommended, the first because of the very serious fire risk, the second because of possible damage to the engine. The latter method should be used only in large four-cycle engines where there is ample clearance between cylinder head and piston.

It is important to remember that particles of carbon almost invariably lodge on the valve seats during the cleaning process. It is, therefore, always advisable to see that the valves, faces and seats are perfectly clean when the work is finished. In L and T head engines this can be done with a cloth when each valve is lifted by its cam, but it is better to remove and grind the valves after cleaning carbon.

Experience has shown that carbon deposits can be minimized in several ways. They always result from an excess of oil passing the piston or the use of the wrong grade of oil, or both, and from running with a rich mixture. Therefore, use only the best lubricants, preferably the grade recommended for your engine by some one of the nationally known lubricant manufacturers; run your engine with the leanest possible mixture and remember that soft oily deposits are a sign of too much oil.

Adjust your lubricating system to feed less oil or fit new rings or pistons; provide a hot-air connection to the carburetor intake to help vaporize the present heavy fuels and carbon deposits will seldom give trouble.

G. A. R., New York, N. Y.

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Yacht Builder, Marine Railways, Storage and Repairs
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110-Ft. Yacht "CONSUELO"

Sixteen Years Designing Experience
Specialty Seagoing Yachts
J. MURRAY WATTS, N. A.
136 South Fourth St. Philadelphia
Phone: Lombard 2072

A Little Service Needed

MoToR BoatinG is in receipt of the letter below from a reader mentioning the poor service on the part of certain marine supply dealers. It seems there is lots of room for improvement, and a little more speed and service will be appreciated.

Dunedin, Fla.

Editor of MoTor BoatinG,
New York, N. Y.

The order from ———— concerning which I recently wrote you has arrived in good shape, contents all O. K.

———— is little if any worse on shipments than any other marine hardware and supply house. It has always seemed strange to me that none of them can pack an order inside of three weeks, whereas I can get 24-hour shipment from any one of several concerns in the automobile hardware and supply business who carry fully as large and diversified stock as ————. You have probably never realized this, since you are fortunate enough to live at the base of supply, but for tens of thousands of us boat bugs in small towns all over the country it is a very serious matter and a cause of endless delay and inconvenience.

I realize it is rather a delicate subject for a magazine to handle. Still, you have done something to inspire engine sales managers to better service, and if you could do the same to the hardware and supply dealers, there are thousands who would "rise up and call you blessed."

J. G. H.

Advertising Index will be found on page 110

Nick Nack, Pleasure Bent

World's Records Smashed!

NICK NACK, owned by Vice Commodore Humphrey Birge of the Buffalo Launch Club, in the Wood-Fisher Trophy race at Detroit, Aug. 27th, 29th and 30th, 1921, **created three new World's records** for displacement runabouts powered with Marine Engines. A fourth World's record was made at Toronto, Sept. 6th.

NICK NACK is a 32′ x 6′3″ displacement runabout, thought out and produced by Hacker Boat Co. of Detroit. Power is a 6 cylinder 5″ x 7″ 200 H.P. HALL-SCOTT STOCK MARINE ENGINE. (824 cubic inches piston displacement.) This boat will comfortably seat seven people.

NICK NACK was entered in the Fisher-Allison race at Buffalo, but was not completed in time to compete. Commodore Birge then entered NICK NACK in the Wood-Fisher race, which is run under an almost duplicate Deed of Gift and same Rules; against boats powered with 12 cylinder 400 and 500 H.P. motors and finished second —establishing the following records:

	M.P.H.
Lap Record..2½ Miles	**42.15**
Former Record.....	41.6
Heat Record..50 Miles	**41.3**
Former Record.....	39.8
Race Record.150 Miles	**40.6**
Former Record.....	38.3
Lap Record....5 Miles	**42.856**

Nick Nack, Racing

Previous records were made Aug. 11-12-13, 1921, in the Fisher-Allison race at Buffalo. Lap record 5 miles 42.856 M. P. H. Made at Toronto—Sept. 6, 1921.

HALL-SCOTT Marine Engines, since their introduction in the Marine field, have been breaking records for uninterrupted operation at all speeds in Runabouts and fast Cruisers. Their performance has proven conclusively that motors properly designed—parts accurately machined and balanced—engines properly assembled and tested, outlive and function better, with fewer mishaps, than the Marine Engine with superfluous weight, inferior materials and workmanship. Ask any HALL-SCOTT owner.

BUILT IN TWO SIZES ONLY

4 cylinder 125 H.P. Weight 1100 lbs.
6 cylinder 200 H.P. Weight 1300 lbs.

Single and Twin Screw Plants in Stock at

HALL-SCOTT MOTOR CAR COMPANY, Inc.

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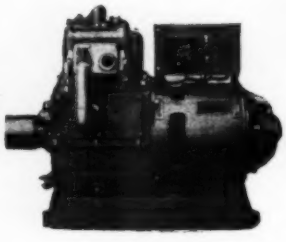
Factory—Berkeley, Calif.

Columbian



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Electric
Generating
Plants

Electrify your cruiser—electric lights are better, cleaner and much more comfortable and convenient. And there is a big factor of safety in having good light and search-light equipment for night navigation.

The Columbian "C. Y. C." is

Compact
Easy to Operate
Runs on Kerosene
Engine Wearing Parts interchangeable with Ford Parts.

Specifications on request.

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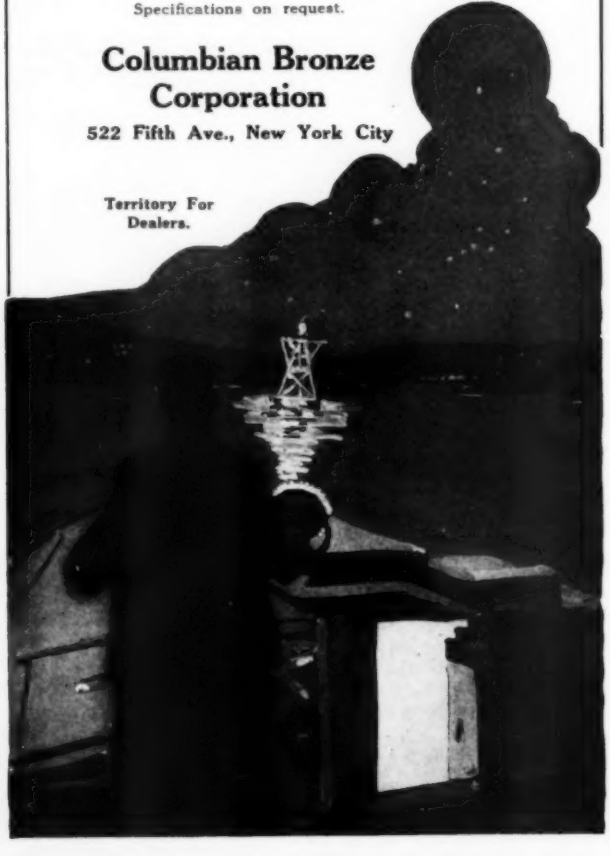
Territory For Dealers.



The Woods and Smiths Keep the British International Trophy in the United States

(*Continued from page* 9)

America II, the winner, his brother George Wood drove Miss America I fast enough to win, and another brother, Phil Wood, the most daring of the three, drove Miss Chicago, winner of second place. Three of Gar Wood's men, likewise all brothers acted as mechanicians. Jay Smith, the brains of American hydroplane building, sat alongside of Gar in Miss America II, Bernard Smith kept the 24 cylinders in Miss America I firing with regularity and precision and Owen Smith saw to it that the engine in Miss Chicago did not jump overboard. All honor and glory should go to these three Woods and three Smiths as there is not a shadow of a doubt cast upon them or their perennial methods of winning races. Yet they lack what they most greatly desire—competition by Americans.

Perhaps it is only by comparison that Maple Leaf VII appeared to be such a misfit and to have so little chance to win even if she had succeeded in completing the two 46.06 mile races. As usual Gar Wood's products were perfection in the highest sense. Miss America I, the boat which he took abroad last summer and which won the trophy at Cowes for this country, was ready and fit. In fact, developments showed that she had sufficient speed and endurance qualities to outrun and outlive this year's English challenger. But Commodore Wood does not base his judgment on after-the-race-conclusions, so he built Miss America II with twice the power of Miss America I and with reserve speed enough, we believe, to make all foreign challengers step lively for several years to come. Then Sheldon Clark gave Jay Smith an order for Miss Chicago, a hydroplane about 22 feet in length powered with a single motor which completed the American team of three boats.

So summarized it was as follows: All American boats were Smith designed and built, all driven by Woods, all mechanicianed by Smiths and all powered with Smith Marine Motors. Miss Chicago was a 22-footer with one 450 h. p. Smith Marine—Miss America I a 26-footer with two, 450 h. p. Smith Marines and Miss America II, a 32-footer, with four 450 h. p. Smith Marines.

The conditions governing the race permit each country which challenges as well as the defending country to enter three boats and the country which first wins two heats irrespective of which individual boat wins is declared to be the victor. This yeat England was the only challenging country and Maple Leaf VII the only boat sent across to try to win back the British International Trophy which was presented by Lord Northcliffe in 1903 and brought to this country last year by Miss America I which won from Maple Leaf V and Maple Leaf VI representing England, and Sunbeam-Deseujols V representing France. In the 1920 American team also were Miss Detroit V owned by Commodore Wood and Whip-po' Will, Jr., owned by Commodore Albert L. Judson of New York. The latter boat burned and sank in a trial trip several days before the races. Both Miss America I and Miss Detroit V showed greater speed than any of the English or French boats although Maple Leaf V had twice the power of either Miss America or Miss Detroit V.

Dixie was the first American boat to win the Harmsworth Trophy. This was in 1907 in England. Dixie II successfully defended it in this country in 1908 and again in 1910. Dixie IV was the successful defender in 1911 but in 1912 Maple Leaf IV, also owned by Sir Mackay Edgar, defeated the American boats Baby Reliance II, Baby Reliance III and Ankle Deep and thereby took the trophy abroad where it remained until last summer although we made an unsuccessful effort to win it back in 1913. We also sent a boat abroad in 1914 but war was declared before the race was held which led to a postponement of all sporting events.

When the challenge was received from England this spring there was some question as to the proper location for the race course. Since the first race in 1903 all the races had been held on salt water but as the trophy was won in 1920 by Gar Wood, whose home is in Detroit, it was only logical when the request came from Detroit for holding the 1921 races in that city that serious consideration should be given to it. While the Motor Boat Club of America is officially in charge of a race for the International Trophy when one is held in the United States, yet as this organization is in existence on paper only and as the officers of this club knew full well of the ability of those at Detroit to handle the details of a race meet of great importance as no other organization in the country can, it did not take them long to decide that the Detroit Yacht Club should have full charge of the 1921 race. A committee consisting of Fred R. Still, A. A. Schantz, W. E. Metzger, A. J. McLeod, W. D. Edenburn, J. Lee Barrett, Gar Wood, O. F. Barthel and C. W. Kotcher was appointed to represent the Motor Boat Club of America and have full power to settle all questions relative to the races which might arise. That the decision to hold the races

(*Continued on page* 54)

Advertising Index will be found on page 110

GREAT LAKES BOAT BUILDING CORPORATION
MILWAUKEE, WISCONSIN, U. S. A.
LARGEST BUILDERS OF EXPRESS CRUISERS IN AMERICA

July 15, 1921.

Bridgeport Coach Lace Co.,
Bridgeport, Conn.

Gentlemen:

We hand you herewith photograph of the Great Lakes 42-foot Express Cruiser BOSS, designed and built for Mr. A. D. Goldman, of St. Louis. We also enclose picture of the main cabin, which reflects the use of your No.4038 cloth for cushion covering. The deck cushions were made of your No.9253 blue Tufhyde.

It occurs to us that you might be able to use a picture of this boat in connection with copy for motor boat trade papers or other magazines. We can furnish additional prints upon request, or views of other boats in which we have used your upholstering materials.

Yours very truly,

2 KH
photo 1352 & 1347

Secretary.

Furnishings

EIGHTY-four years we have been manufacturers of high grade fabrics and furnishings, particularly for enclosed automobiles. We now furnish Bridgeport Fabrics to 80% of American enclosed car manufacturers and custom body builders.

Everything in Furnishings

Fabrics: Velours, mohair, woolen cloths, Protex and other seat cover materials, Tufhyde (artificial leather), Topsemall and Paratop (top materials) Bridgeport Mohair (open-boat fabric).

Tassels, carpets, robe rails, door cords, toggle grips, and other interior trim.

Curtain silks, cords, rollers, sticks, lights, celluloid, other fixtures.

Bows, bow sockets, rests, bow linings.

Webbing, buckram, burlap, duck, cotton batting, coach wadding, curled hair, moss.

Gimp and welt of all kinds, and finishing ends.

Seaming, pasting and broad lace, bindings of all kinds.

Door hinges, handles, locks and all interior hardware.

Needles, tacks, Artlea buttons and nails, fasteners, grommets, rivets, screws and screw hooks, and all trimmers' tools.

Foot rests, cowl ventilators, exhaust heaters, vanity cases, vases, dome lights, dictaphones and other interior accessories.

Although we have never advertised to the marine market, we count the leading boat builders among our old friends and customers.

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We are now specializing in marine furnishings. Ask our nearest branch to send a representative to call upon you.

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Designed and Made By J. E. Caldwell & Co.

Special Trophies
In Precious Metals

Upon receipt of information of the ideas to be incorporated and the limit of price, appropriate sketches will be submitted without charge, the sole right of production being reserved by this house.

Ready For Immediate Delivery

Loving cups, bowls, vases, tankards, shields, plaques, and other articles suitable for prizes and presentation pieces.

J. E. Caldwell & Co.
Designers and Makers of
The Carl Fisher Gold Cup
The Wood-Fisher Gold Trophy
Philadelphia

The Woods and Smiths Keep the British International Trophy in the United States

(*Continued from page* 52)

at Detroit and allow this committee to have full charge was a wise one was fully proven and demonstrated by the excellency of all arrangements.

The first heat was scheduled for Saturday, August 27, and everything was set for the great race which was to decide the supremacy of the world. Detroit papers and those of surrounding towns had been giving publicity to the race for months. Therefore, when the great day arrived there was hardly room enough on the banks of the Detroit River for the crowds which assembled to see the boats run.

The two days preceding had been given up to the elimination trials which were for the purpose of determining which three particular boats would make up the American team to meet the foreigners. Any boat in the country was permitted to enter the elimination trials and if she showed the necessary speed, endurance and seaworthy qualities she would have been picked as one of the team of three defending boats.

While it is a fact that there were a number of entries other than the three boats which were finally chosen, yet the Detroit Committee showed great judgment in choosing Miss America II, Miss America I and Miss Chicago as the three boats to represent America. As has been mentioned above all three of these boats were built and designed by Jay Smith of Algonac and powered with Smith marine motors.

The principal dimensions of the three American boats as well as the English boat were as follows:

Official Measurements of Boats entered in the British International Race at Detroit—1921

	Maple Leaf	Miss America I	Miss America II	Miss Chicago
Length over all	33′ 8″	26′ 00″	32′ 00″	22′ 00″
Beam	9′ 2½″	6′ 9″	8′ 9″	6′ 4″
Bore	4″ 7″	5″	5″	5″
Stroke	6′ 3″	7″	7″	7″
Distance of step from bow	19′ 6″	15′ 8″	19′ 8″	10′ 8″
Distance of step from transom	13′ 6½″	10′ 00″	12′ 00″	10′ 2″
Depth of step	5½″	4″	4″	3¾″
Beam at transom	8′ 6″	6′ 5″	6′ 8″	5′ 7″
Diameter of propeller	19″	20″	22″	20″
Diameter of shaft	1½″	....	....	....
Width of blade	10″	8″	8½″	8″

About four hours before the scheduled time for starting the first heat Col. Tate, driver of Maple Leaf VII, announced that it would be impossible for him to run his boat on that day due to the fact that he had discovered a poor bearing in one of the gear boxes. Col. Tate made a formal request of the Committee for a postponement of the first heat and without the slightest hesitancy those in charge of the race granted the request for postponement and set the time for the first heat at 4 P. M. the following Monday.

When the discovery of the defective part in the gear box was made all the plants of Detroit had closed down for the Labor Day holidays. At first it was thought that this might cause inconvenience in securing a new part inasmuch as it had to be specially machined due to the fact that the gear box was of English design and construction. However, the officials of the Packard Motor Car Company were gotten in touch with and they immediately turned over the entire Packard plant to Col. Tate and called in enough employees from their vacation to permit a force to work all night and as long as necessary in order to turn out a duplicate of the defective part. Henry and Edsel Ford also personally offered to turn over the entire Ford Company facilities to Col. Tate and if necessary to open up the Walkerville Branch of the Ford Company in order that the part might be made in Canada and thus comply with the Deed of Gift which requires that all parts of the competing boats must be manufactured in the country represented. The Detroit officials, however, waived this technicality and permitted Col. Tate and the crew of Maple Leaf VII to procure American parts if they so desired.

The repairs on Maple Leaf were completed by early Monday morning and after a trial trip Col. Tate announced that his boat would be ready to start at 4 P. M. Therefore, the first race for the British International Trophy since 1913 was assured.

As usual Gar Wood with his boat was on hand in plenty of time. Soon after 2:30 in the afternoon, nearly an hour and a half before the scheduled time of the start, the three American boats came down the river from the Detroit Edison plant where they had been housed and tied up at the Committee Boat. Col. Tate also visited the Committee Boat for his official instructions and to get the official time. Maple Leaf VII, however, did not put

(*Continued on page* 66)

The Safe Motor for the Hunter

A motor which tilts automatically when striking unseen obstructions in the shallow and precarious waters where hunting abounds—a motor whose underwater design insures freedom from weeds and whose ignition system insures a quick, easy and positive start in damp or cold weather—that is the sportsman's ideal of safety in an outboard motor.

Thanks to Ole Evinrude's native ability as a designer, supported by his sportsman's instincts, all these advantages are available to the hunter who chooses the ***Elto*** Light Twin—Mr. Evinrude's latest motor manufactured by his new organization, the Elto Outboard Motor Co.

Because of its light weight, perfect mechanical balance and wonderfully smooth performance, the ***Elto*** is safe alike on the lightest and frailest of hunting skiffs and rowboats.

Because of its novel and efficient underwater exhaust, it quietly propels its boat back and forth among the hunting grounds in those "wee" morning hours without the least disturbance.

The ***Elto*** with its full 3 H.P. is equal to the demands of stormy and rough weather, for it abounds in power for any emergency. Its self-contained automatic tilting device insures safety to both motor and boat in shallow or dangerous waters.

Weighing but 46 pounds and with its rudder folded for carrying, the ***Elto*** is so snug and positively compact, either in its carrying case or otherwise, that "comfortably portable" aptly describes this ideal rowboat motor.

The ***Elto*** is but another proof of the genius of Ole Evinrude the originator of the outboard motor.

Complete details of this remarkable motor may be found in the Elto booklet. Write for it now.

ELTO OUTBOARD MOTOR CO.
Ole Evinrude, Pres.
MFRS. HOME BLDG. Dept. F MILWAUKEE, WIS.

"Comfortably Portable"
Weighs 46 lbs.

Elto Carrying Case

Elto
LIGHT TWIN OUTBOARD MOTOR

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The Densmore 73-ft. Standardized Cruising Yacht strikes a new note in high class yacht construction. A boat of known ability and demonstrated success, ready for prompt delivery. Details on request.

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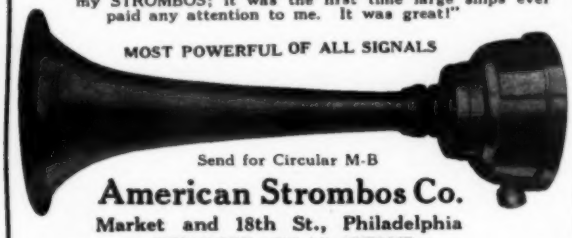
are naturally yours with a
"STROMBOS"

. . . . "Each big freighter and the passenger ship answered my STROMBOS; it was the first time large ships ever paid any attention to me. It was great!"

MOST POWERFUL OF ALL SIGNALS



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Special Boats for Outboard Motors, Motor Boats 16 to 24 ft. long. For lakes, rivers, shallow water, and weeds.

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FOUR CYCLE MOTORS

Strictly quality motors at the price you want to pay. Handsome, clean-cut unit power plants which look good in the boat and give the kind of service that pleases the experienced boat owner. Suitable for pleasure or work boats.

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TRADE MARK

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REBUILT MOTORS

The Engine You Want at the Price You Want to Pay

We carry in stock inboard and outboard motors ranging from 1 to 600 H.P., of all types. These machines are honestly rebuilt in our own shops and sold with an IRON-CLAD GUARANTEE. We recently announced a reduction of 20% in the price of these engines, which brings the prices in most cases down to about 40% of Their Original Cost.

Write us for our Bargain List—it will be sent anywhere on request.

BRUNS, KIMBALL & CO.
153-155-157-159 West 15th Street New York City

We also are distributors of and carry a stock of the following NEW motors —the finest built in this country—

Sterling	Kermath	Murray & Tregurtha	Missouri
Gray-Prior	Peerless	Wolverine	Roberts
Frisbie	Arrow	Doman	

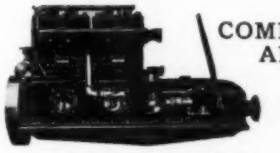
Advertising Index will be found on page 110

GRAY-PRIOR
FOUR CYCLE MARINE MOTORS
Built up to a Standard—not down to a price.

MEDIUM HEAVY DUTY TYPE

FOR

COMMERCIAL BOATS AND CRUISERS



Bore, 4½ inches.
Stroke, 8 inches.

Kerosene, Distillate or Gasoline Fuel

Write us your requirements.

THE GRAY & PRIOR MACHINE CO.
56 Suffield St. Hartford, Conn., U. S. A.

WOOLSEY COPPER PAINTS
and MARINE PAINT SPECIALTIES ARE THE WORLD'S STANDARDS

Copper Paints—Brown, Red and Green, Yacht White, Deck Paint, Marine Mixed Paints, Metal Bottom Paint, Seam Paint, Seam Compounds, Sparon (Spar) Varnish, Engine Enamels, Canoe Enamels, Boat Bottom Seam Compound, Copper Bronze, Light Sea Green and Regatta Green Yacht Bottom Paints, etc.

C. A. WOOLSEY PAINT & COLOR CO.
Jersey City, N. J., U. S. A.

Send for our Marine Booklets, Free—Contain Color Spots and information "How to Paint a Boat."

DOMAN
OSHKOSH, WIS.

DOMAN MARINE MOTORS
from 4 to 50 H.P.

There is a size to suit you. Write for literature. Doman engine division of

UNIVERSAL PRODUCTS CO.
Oshkosh, Wis.

Build It of Cypress
"the Wood Eternal"

and forget about planking rotting and the need of constant repairs. For 20-ft. Runabout or 200-ft. Cruiser—or more—or less—no wood compared with grand, old CYPRESS "the wood Eternal." Write TODAY for **Vol. 19** of the famous CYPRESS POCKET LIBRARY, "CYPRESS FOR BOATS." It tells *Why*. It's FREE.

TIDEWATER CYPRESS, "the Wood Eternal," is identified by the CYPRESS trade-mark "arrow." Please write us immediately if you can't find it.

Southern Cypress Manufacturers' Assn.
1317 Poydras Building, New Orleans, La., or
1317 Graham Building, Jacksonville, Fla.

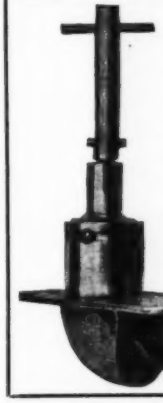
B. Schellenberg & Sons

EVERYTHING FOR THE PERSON OF THE YACHTSMAN, HIS OFFICERS AND HIS CREW

Clubs, yacht owners, commercial boat owners, should take advantage of our many years' experience in outfitting the mariner, both inland and deep sea.

Crews and Club Attendants furnished without Charge.

B. SCHELLENBERG & SONS
99 to 105 Myrtle Ave., near Bridge St.
Brooklyn, N. Y.

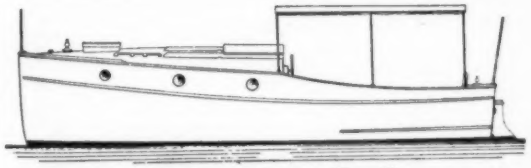


Automatic Self Bailer

Drains your bilge simply by action of boat passing through the water. For any boat, slow or fast, large or small—fresh or salt water. Guaranteed to operate for the life of boat without repairs, adjusting, oil or upkeep attention. In ordering state thickness of planking and length safety handle desired.

Write for details. Good proposition for dealers.

ST. CLAIR IRON WORKS
206-212 Witherell Street, St. Clair, Mich.



28 x 8' 6" Cruiser "Scout"

Built Right — Priced Right. This season's greatest boat value. Large cockpit, roomy cabin with toilet, galley and berths for four. Full headroom. 4-cycle motor, speed 9-10 M.P.H., fully equipped for cruising, $2,500.

We furnish K.D. frames to complete outfits in both runabouts and cruisers. Let us quote on your requirements.

RICHARDSON BOAT CO.
370 Sweeney St., No. Tonawanda, N. Y.

The Compass For Your Boat

should be the best obtainable. For seventy years Ritchie compasses have been the choice of experienced navigators.

Select the Ritchie for your boat.

Our catalog will show you the one best suited for your needs. Send for a copy today.

E. S. RITCHIE & SONS
Established 1850
110 Cypress Street
Brookline, Mass.

BELLE ISLE BEAR CATS

FINISHED FIRST—SECOND—THIRD

in every race they entered at the Detroit Regatta including:

Detroit Automobile Club Free-for-all Runabout Race
Miller Chance Race Runabout Division
Detroit News Trophy 60-mile Handicap

The "Water Circus" staged by the Bear Cat fleet was the most interesting feature of the Regatta.

No mechanical or hull trouble was experienced by any Bear Cat during the Regatta.

Let us send you further details of these wonderful boats.

BELLE ISLE BOAT & ENGINE CO.
9662 E. JEFFERSON AVENUE, DETROIT, MICHIGAN

MARINE HARDWARE AND SUPPLIES

Our Catalogue will help you select the right equipment for your boat

Copy sent on request

Prompt Delivery *Right Prices*

W. & J. TIEBOUT
Established 1853 **Incorporated 1892**
118 Chambers St., New York City

"DAYTON" LIGHTING AND IGNITION SYSTEMS. 6, 12, 32 VOLTS COMPLETE

A Product Proven by 20 Years' Actual Use.
Complete Catalogue Upon Request.
THE A-C ELEC. MFG. CO., DAYTON, OHIO

DON'T BUY A BOAT

TILL YOU SEE THE

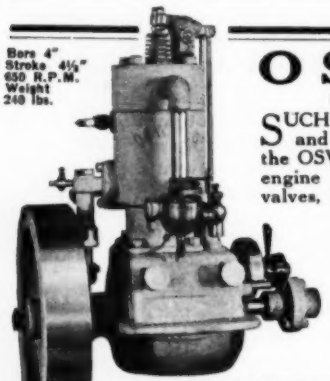
CAPE COD 20-FT. DORY LAUNCH

The Safest Little Family Boat Built. Motor Housed In.
Other Standardized Cape Cod Boats

17′ Sail Dory	14′ Outboard Motor
16′ Shallow Draft	10′ Row Boat
17′ Life Saving Dory	12′ Row Boat

Write for Prices

CAPE COD SHIPBUILDING CORPORATION
Successors to Cape Cod Power Dory Co.
Builders of craft to 150′ length, or 10′ draft
Winter Storage
Main Office and Works, 367 Main Street, Warsham, Mass.
New York Show Rooms, 412 Eighth Avenue, New York City
Export Office, Factory Sales, Sprague and Duckett, 342 Madison Ave., New York City



OSWALD

5 H. P. FOUR CYCLE

SUCH quality of design, materials and workmanship as used in the OSWALD is seldom seen in an engine of this size. Overhead valves, lubrication through drilled crankshaft, every part perfectly machined. Finest materials and equipment money can buy. The product of 8 years' experience, built in a modern well equipped factory.

Write to-day for full description and prices

OSWALD GASOLINE MOTOR CO., 3103 Turk Street San Francisco, Cal.

Write Us for Quotations

on any marine supplies or specialties you want—one or one hundred, any article or any quantity. We don't issue a mail order catalog because conditions, stocks and prices change too frequently these days—but we are here to give you intelligent service, prompt attention and honest prices on whatever you want.

Write us today

Anything for boat or ship, large or small.
Honest Goods at Honest Prices.

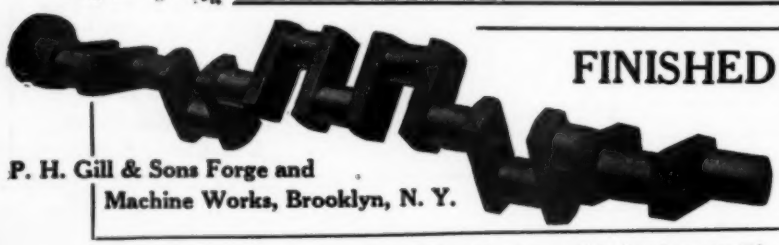
BOSTON MARINE HARDWARE CO
259 Atlantic Ave., Boston, Mass.

WATERPROOF CLOTHING

Real waterproof clothing that outlasts three or four of the ordinary waterproof garments. The only known clothing that is also proof against the action of acids, alkali or copper water.

Ask your dealer—don't accept substitutes. The only line for live Marine Dealers.
Write for proposition

GOLD MEDAL WATERPROOFING CO.
Oakland **California**

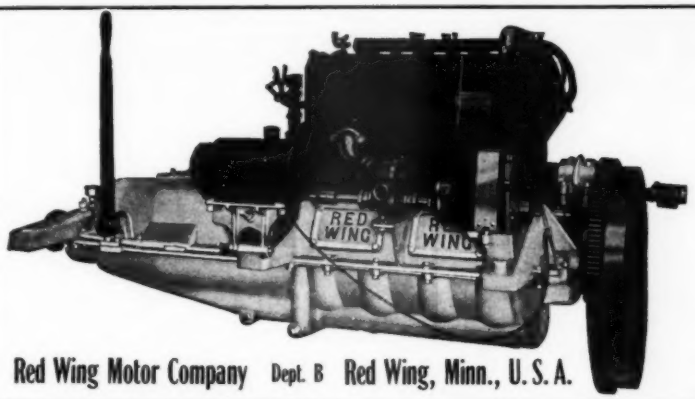


FINISHED CRANK SHAFTS

We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel, Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.

P. H. Gill & Sons Forge and Machine Works, Brooklyn, N. Y.

Advertising Index will be found on page 110



Red Wing Motor Company Dept. B Red Wing, Minn., U. S. A.

Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

MOTOR REPUTATION

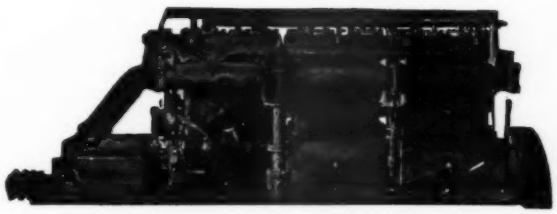
MOTOR Reputation—like a sheep's hind leg—and up and down, in most instances. What's here today is gone tomorrow. The popular motor of ten years, even five years ago is not even manufactured and the owner of one of them is certainly out of luck if he happens to need a part.

Consider then, what it means to you to own a motor built by one of the largest manufacturers of marine motors in the country, a concern that has been in business for over a quarter of a century, one that will not be gone when you need service.

Reputations are fickle in many cases and the Red Wing "THOROBRED" stands where it does for only one reason—sheer merit.

Other motors may disappoint you. A "THOROBRED" won't. Write for the facts. Five sizes, from 10 to 40 H. P. They burn either kerosene or gasoline.

YACHTS -- CRUISERS -- HOUSE BOATS



Experience Teaches — Hence the reason that once an owner of a New York Yacht Launch and Engine Craft always an owner. Many years experience in high class Yacht Design and Construction are at your service.

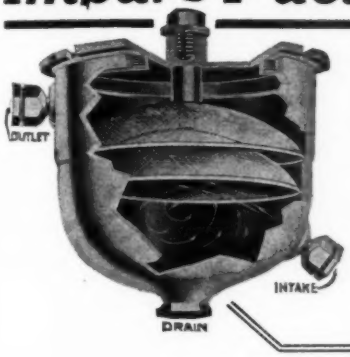
20th CENTURY MOTORS

400 to 500 R. P. M. Heavy Duty Type Four cycle. Bore 6½", Stroke 8"

2 cyl. 15-20 B. H. P.
4 cyl. 40-50 B. H. P.
6 cyl. 65-75 B. H. P.

NEW YORK YACHT LAUNCH & ENGINE CO., Morris Heights, New York City

Impure Fuel Due to Water! KLEENGAS PURIFIER



Fully 90% of your carburetor trouble is caused by water and dirt in your fuel. You can prevent this trouble entirely with a KLEENGAS PURIFIER.

You can't prevent water from collecting in your fuel tank and line—it condenses from damp atmosphere as well as the water in the gas or kerosene you buy. You can't prevent sediment, dirt, fluff, rust, impurities—some scales off the tank lining—some comes in the gasoline itself. But you can prevent all the troubles caused by these impurities.

KLEENGAS is a high grade PURIFIER scientifically designed, simple in construction and made of the best non-corrosive materials. Aluminum bowl, double parabolic fine mesh bronze screens, brass drain tap at bottom. It cleans itself by the swirling motion, the impurities dropping down so they don't clog the screen. Large capacity allows full gas flow and requires only occasional draining.

Order a KLEENGAS today—$10.00 postpaid. Money cheerfully refunded if not as guaranteed. Hundreds in use. Easily installed—no soldering.

Excellent proposition for distributors and dealers—write

THE NATIONAL AUTOMOTIVE MFG. CO.
822 CHAMPLAIN AVE., N. W. - - - CLEVELAND, O.

DOES YOUR BOAT LEAK?

Send for Booklets—"HOW TO MAKE YOUR BOAT LEAKPROOF," and "MARINE GLUE—WHAT TO USE AND HOW TO USE IT."—Each grade is for a different purpose. IT IS IMPORTANT THAT YOU USE THE GRADE WE RECOMMEND. Any old boat, so long as the frames are in fair condition, can be made water-tight by following the instructions in the above booklets. This applies to anything that floats, from a canoe to a yacht, wood or steel. Put your leak troubles up to us, we will help you to stop them.

JEFFERY'S MARINE GLUE IN ALL THE VARIOUS GRADES

For Sale by all Yacht Boat and Canoe Supply Houses, Hardware, Paint and Oil and Sporting Goods Dealers

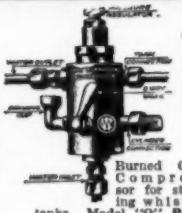
L. W. FERDINAND & CO. - - - - - - - - 152 Kneeland St., Boston, Mass., U. S. A.

DECK CANVAS-ALL WIDTHS
YACHT SAILS-AWNINGS-SPRAY HOODS - Etc.

522 So. Delaware Ave Philadelphia GEO. R. BURROWS. Inc. 2 South St New York

ZUNDEL

Burns denatured alcohol. Width 20 in. Depth 15 in. Height to top of tank 9 in. Price $17.50.



Burned Gas Compressor for storing whistle tanks. Model "O" Price $10.75.

6-volt Marine Horn. 9 in. high, 4 in. wide at base, weighs 3¾ lbs. Price $9.50.

R. W. ZUNDEL COMPANY, Inc.
47 Whitehall St.—Phone Bowling Green 9157—New York, N. Y.

BOAT SUPPLIES

GRAY-ALDRICH COMPANY, INC.
84 Atlantic Avenue
Boston, Mass.

REBUILT ENGINES

ALL ENGINES THOROUGHLY REBUILT UNLESS OTHERWISE SPECIFIED

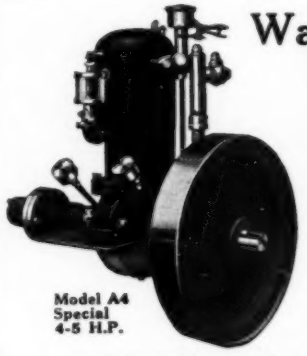
255	36	H.P. Lathrop, 3 cyl. 2 cyc. with reverse gear	$490.00
275	80	H.P. Wolverine, 3 cyl. 4 cyc., Prop. and Reverse Gear	2500.00
277	16	H.P. Lathrop, 2 cyl. 2 cyc.	285.00
287	24	H.P. Lathrop, 2 cyl. 2 cyc. and reverse gear	425.00
312	20	H.P. Lathrop, 2 cyl. 2 cyc.	350.00
329	24	H.P. Lamb, 4 cyl. 4 cyc. with reverse gear	498.00
343	215	H.P. Van Blerck, Model E-8, 6x6, new with elec. starter	1765.00
346	20	H.P. Palmer, 4 cyl. 4 cyc. as is, with reverse gear	250.00
348	40	H.P. Automatic, 4 cyl. 4 cyc. with rev., magneto, propeller and shaft, as is	300.00
351	32-37	H.P. Standard, 4 cyl. 4 cyc. Rev. and Magneto as is	500.00
353	100-125	H.P. Standard, 6 cyl. 4 cyc. Reversible, as is	1500.00
354	100	H.P. Fairbanks-Morse C. O. 4 cyl. new, with propeller equipment. Brand new	6200.00

Trenholm Fuel Vaporizers for using kerosene fuel on 4 cycle engines. Vaporizer circular on request.

Crockett's Spar Composition
is the only varnish
which will last
a season on
a deck

E. Z. VARNISH REMOVER
Film remains soft until removed

THE DAVID B. CROCKETT COMPANY
Bridgeport, Conn.
The Bissell Varnish Company, *Successor*



Waterman Motors—
Known The World Over
This High Grade Power Unit is Offered at
Greatly Reduced Price
Write Promptly
For particulars and circulars

Model A4 Special 4-5 H.P.

ARROW MOTOR & MACHINE CO.
738 Frelinghuysen Ave., Newark, N. J.

MARINE JOINTS

That Transmit Full Power at Full Speed.
Have been giving satisfaction for sixteen years.

BLOOD-BROS. MACHINE CO.
Pioneer Builders of Universal Joints
ALLEGAN MICHIGAN

Money Saved Is Money Made

E. J. WILLIS CO. 85 Chambers St., New York

BARBOUR METAL BOATS

THE strongest, most durable boats of their size that can be built. Flat bottom and V-bottom, all good seaworthy models. Outboard motor boats, launches, life boats and rafts from 14 ft. up. Also patterns and K. D.

Write today for catalog and prices.

BARBOUR BOAT & PATTERN CO.
Valley Park, St. Louis Co., Mo., U. S. A.

Trade *Mark*

The most efficient and dependable ignition system for motor boat engines is the Bosch High Tension Magneto. It develops added Power, Economy and Comfort.

Over 500 Service Stations in 500 Centers

AMERICAN BOSCH MAGNETO CORP.
Main Office and Works: Springfield, Mass.
Branches at New York, Chicago, Detroit, San Francisco

Advertising Index will be found on page 110

CHAS. CORY & SON, Inc.

CORY SAFETY SERVICE

MANUFACTURERS & INSTALLATION & LIGHTING SYSTEMS

ENGINEERS OF INTER-SIGNALLING EQUIPMENTS

Cory Building, 183-7 Varick Street, New York, N. Y.

Marine Distributors and Installation Engineers of

Foamite Firefoam

in the United States of America

The adoption of oil as fuel for steamships is responsible for a large percentage of the increase in the number of marine fires.

Destruction is multiplied by the application of water which floats the fire to other locations.

FOAMITE FIREFOAM, having a lower specific gravity than oil, remains on the surface, confining and smothering the flame with a chemical blanket resembling lava.

Further particulars sent upon request.

PURDY BOAT COMPANY

Designers and Builders of

EXPRESS CRUISERS

TRENTON MICHIGAN

Improved Motor Boat Closet

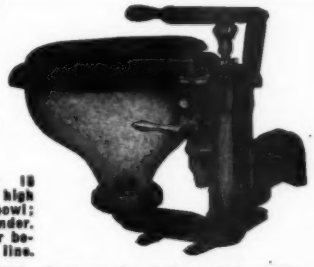


Figure 1404

Dimensions: 18 x 18 x 11" high to top of bowl; 2½" cylinder. For above or below water line.

The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

All prices subject to market advances, which are continually changing.

THE J. H. CURTISS CO.

The J. H. Curtiss Co.

Pioneer Specialists in Marine Sanitary Fixtures

Since our advertisement appeared in the first issue of MoToR BoatinG, December, 1907, hundreds of Curtiss fixtures have been installed in motor cruisers and yachts of all sizes, including some of the finest boats launched within this period.

The Curtiss line is exceptionally complete, varied in type, size and price to meet every possible requirement. Each model has been designed in accordance with our wide experience in boat work and can be depended upon in quality, service and durability no matter whether it is our highest or lowest priced model.

"PRICES ON APPLICATION"

With Pump

Cock on pump swings upward, thus preventing breaking of bowl. Soap-dish is porcelain and removable.

No. 5 Height, 19 in. Width, 19 in. Depth Closed, 5 inches. Quartered Oak Case, or Mahogany Case.

Lining and Fixtures Nickel-plated. Porcelain Bowl. Mahogany or Quartered Oak Case.

2 South Street, New York

THE JOHNSON MARINE REVERSE GEAR

In Six Sizes

AN ALLOY STEEL GEAR, MODEL "F" BALL BEARING, carried in stock by our agents wherever there are good Boating Facilities.

Write Department 25 for Model "F" price list—it's free.

From 1 to 100 H. P.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

Motor-boats Sailboats

"V" Bottom Hydroplanes

CABIN CRUISERS

of all types made from our plans or to your design. Let us tender on your new boat.

Miss Kitto

CANADIAN BOATS

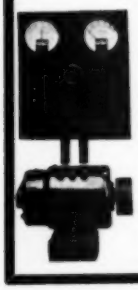
Can be laid down in U. S. cheaper than U. S. boats of the same quality and workmanship. Write for our Catalogue.

WALTER DEAN CANOE & BOAT CO., Ltd.

"Boat-builders since 1888"

TORONTO CANADA

TRADE
EUKERLIGHT
MARK



For Motor Boats, consisting of Dynamo and Switchboard with 12 Volt Storage Battery.

Plant Type F has a capacity of 30 lamps of 4 candle power or 10 lamps of 15 candle power. Price $100.00 F. O. B. Factory. Export price $115.00.

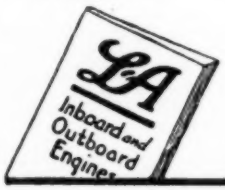
All apparatus fully guaranteed for 5 years. Write for prices for larger plants, for 32 volt systems with Engines.

International Battery Co.
Grand Rapids, Mich., U. S. A.

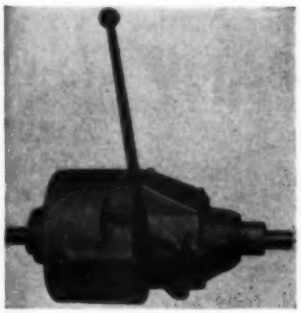
Get this LA Engine Book

—it gives valuable information about motor boat engines. It also describes the full line of L-A inboard and outboard motors and tells of the 30 days' free trial plan.

Write for your copy today.



LOCKWOOD-ASH MOTOR CO.
2107 Jackson St. Jackson, Mich.
(22)



MASTER REVERSE GEARS

Strictly high quality reverse gears. Multiple disc clutch, nickel steel shaft and gears, hardened and ground, with bronze bushings working on hardened steel pins. Aluminum case saves weight.

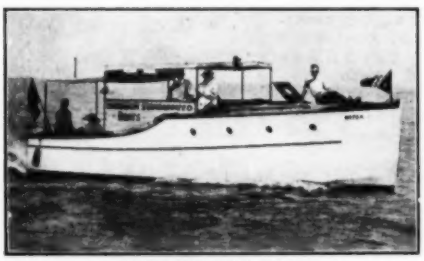
Four sizes transmitting 12, 25, 50 and 85 H.P. respectively per 1000 R.P.M.

Write today for prices.
MASTER MOTOR CO.
19 Price Ave.
Lockport, N. Y.

Built by
LUDERS
The Last Word in Yacht Designing and Building

Luders Marine Construction Company
Stamford, Conn.

Are You Going South?



"HARRISON 32" in action

The "HARRISON 32" is a thoroughly salt water boat unexcelled for ease of handling, speed, seaworthiness, comfort and beauty. An extremely high quality boat at a moderate price.

This boat accelerates like a high-powered car from a trolling speed to a comfortable cruising speed of 12 M.P.H. Pronounced by all who have seen them to be the biggest value ever offered and the ideal boat for Southern use. Price with 40 H.P. motor, including War Tax, $4050.00.

R. W. HARRISON BOAT WORKS
Bay View Park *Established* 1897 TOLEDO, OHIO

The Gordon Silencer and Under-Water Exhaust

No Noise No Smoke
No Pounding No Grease
Does not retard motor

With Fresh or Salt Water Fittings
F. O. B. Cleveland
$12.00

The Gordon Propeller & Mfg. Co.
9001 Desmond Ave. Cleveland, Ohio

GIERHOLTT
Gearless Drive Outboard Motors
Marine City, Mich.

The Motor of No Drawbacks

Solves:
The Starting Problem
The Weed Problem
The Shallow Water Problem
GEARLESS DRIVE

In carrying or installing position heaviest part weighs 40 lbs. All parts accessible. Carries like a hand bag. Detachable propeller shaft. Removable gas tank. Convertible to inboard. Write for particulars.
AGENTS WANTED

The Barker Motor
(Two-Cycle)

"Have run my Barker Motor thirty thousand miles in ten years and it is good for ten years more."—Name on request.

Built for long service
Sells at low price

The BARKER FACTORY
Norwalk Conn.

Write for Barker's "Red Letter" Book of Motors

In New York:
TOPPING BROS.
111 Chambers St.

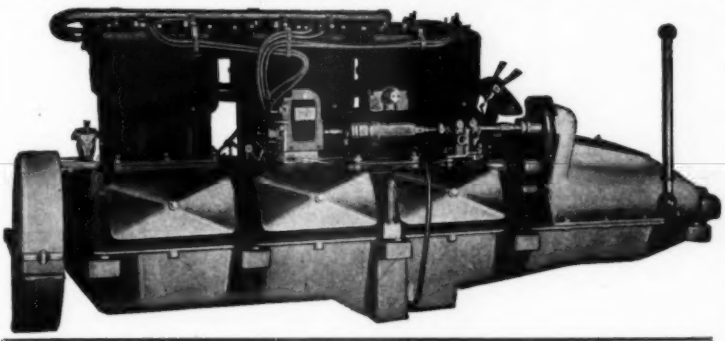
In Boston:
TOPPAN CO.
101 Haverhill St.

In Philadelphia:
KEAN, SHARON & CO.
144 N. Second St.

Advertising Index will be found on page 110

Power And Plenty Of It

THE "D" Series Scripps engines develop more "POWER" than other motors of like bore and stroke. Time and time again replacements by "SCRIPPS" motors in old hulls have shown increased speed and a reduction in operating and fuel expenses. "SCRIPPS POWER" is dependable power, the kind that stays with you as long as you need it, whether in a snappy spurt or on a long, hard lugging Pull. Durability, reliability and economy have always been associated with "SCRIPPS" products.



New refinements in the 1921 model and added motor conveniences will make "SCRIPPS" performance even more noteworthy.

Solve your engine problems satisfactorily by selecting an engine that is time tried, but up to the minute in every modern requirement. Power plants for commercial, pleasure, cruiser, runabout or auxiliary in two, four and six cylinder, medium duty and high speed type, with the option of gasoline or kerosene equipment. Power ranges from 10 to 125 H.P.

In order to show the world the reliability of our motors we built "The Detroit," a 35' x 8' motor boat, equipped with a 12-15 H.P. SCRIPPS MOTOR, and ran her, under her own power, every inch of the distance from Detroit, Michigan, to St. Petersburg, Russia (now Petrograd). The start was made from Detroit on July 2, 1912. She arrived in St. Petersburg September 13, 1912—6008 miles with ABSOLUTELY no trouble. Ask Thomas Fleming Day, her skipper, or Walter Moreton of Boston, they will tell you. No other manufacturer has dared to attempt a similar demonstration of reliability. A Scripps Motor will run when nearly upside down, as demonstrated by Larsen's trip through the Niagara Rapids in October, 1911. Do these wonderful demonstrations of reliability and stamina mean anything to you?

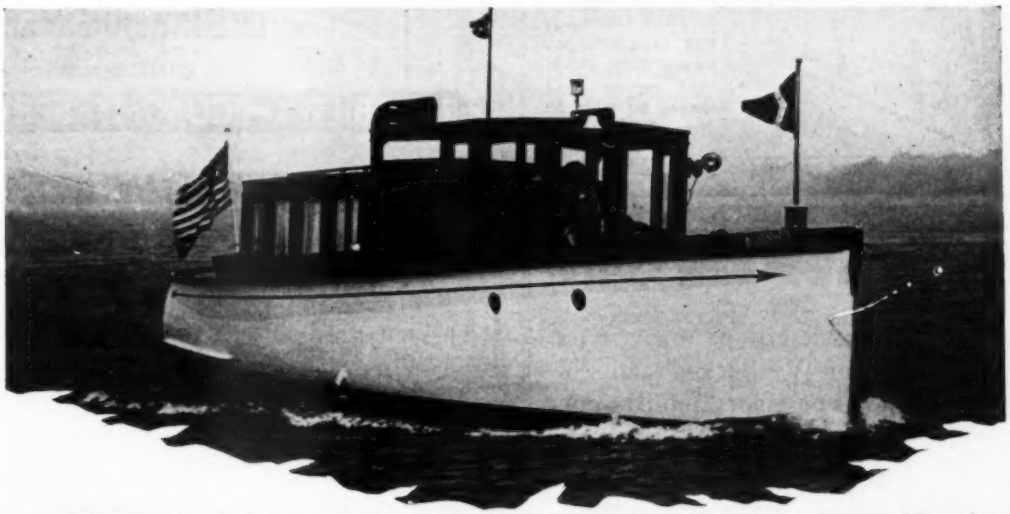
SCRIPPS MOTOR COMPANY

5819 Lincoln Ave. **Detroit, Mich.**

ELECTRICITY afloat leads the way in Safety, Reliability, Comfort and Economy, as applied to day cruisers, yachts, house boats and commercial vessels.

William T. Donnelly, Consulting Engineer

17 Battery Place, N. Y.



"LIGHTNIN." Smallest electric cruiser afloat. Electricity will give you best power for propulsion, clean heat for cooking, bright light at night and will make yachting a pleasure all the time and everywhere you go.

The Speedy Runabouts, Trim Cruisers and Open Motor Boats bearing the Racine-Wis trade-mark give their owners keen pleasure and complete satisfaction.

We also build standardized runabouts, open motor boats, special boats for outboard motors, rowboats, and the famous Racine-Wis line of canoes. We will design and build a boat according to your specifications.

Tell us the kind of a boat in which you are interested and we will mail you descriptive catalog.

RACINE BOAT COMPANY, 1908 Holman Street Racine, Wisconsin

Pioneer Boat Builders of the West

RAY-DI-CO "Dynamotor"

Reg. U. S. Patent Office

500 Volts from your 32-volt system

The very heart of a radio telephone is the generator. Ray-Di-Co "Dynamotor" is a complete motor and generator combined, operating on your 32-volt lighting system and delivering 500 volts, 50 or 75 watts. Ray-Di-Co "Standard" gives 500 volts up to 175 watts capacity.

We manufacture and install radiophones and radiophone equipment. Write for details.

RAY-DI-CO

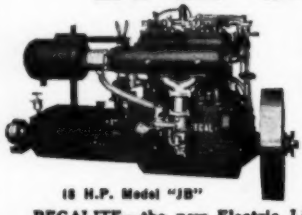
(Ray-dee-Ko)

1549 North Wells Street Chicago, Illinois

Twenty Years on the Market

REGAL

—FOUR CYCLE— MARINE ENGINES



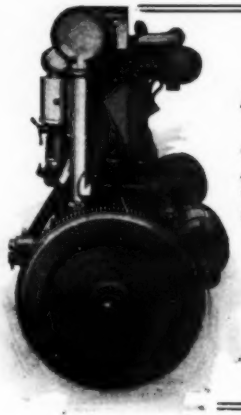
18 H.P. Model "JB"

Built for commercial or pleasure boats. Sizes 2 H.P. —weight 125 lbs. to 50 H.P. —weight 5000 lbs. One to four cylinders. Use gasoline, kerosene or distillate for fuel. Easy to start and may be throttled to a very slow speed.

REGALITE—the new Electric Lighting Plant, 2 h.p. air cooled motor, ¾ k.w. generator. Write for information.

REGAL GASOLINE ENGINE CO.

74 West Pearl Street COLDWATER, MICH.



Peerless

New High Speed— Light Weight

The product of experience and development in actual boat service. Extremely light weight is secured by employing special castings and alloy steels throughout.

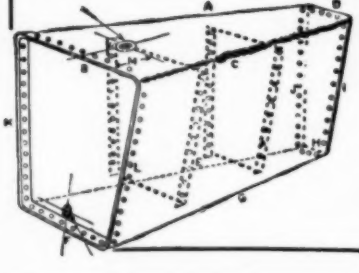
Bore 5". Stroke 7". Speed 1650 R.P.M.

4 cyl. 125 H.P..... 700 lbs.
8 cyl. 250 H.P..... 900 lbs.
12 cyl. 400 H.P.....1100 lbs.

Peerless Marine Motor Co.

2160 Niagara St. Buffalo, N. Y.

Gasoline Tanks, Air Whistle Tanks, Mufflers, Stacks, Special Plate and Sheet Metal Work for Pleasure Boats.



L. O. KOVEN & BROTHER

Main Office, 158 Ogden Ave., Jersey City, N. J.

Branch, 50 Cliff St., New York City.

LUNKENHEIMER

Automotive Accessories

WRITE FOR CATALOG Nº 5-CC

THE LUNKENHEIMER CO.

"QUALITY"

CINCINNATI

RELIABILITY-ECONOMY-SERVICE

30-14-33

MULLINS STEEL BOATS CAN'T SINK

Big, new Catalog, describing many styles of the latest type of "V" Bottom steel motor boats, rowboats or canoes mailed upon request. *Write for it today.*

THE MULLINS BODY CORP.

Boat Department

622 Depot Street Salem, Ohio

"LIBERTY KID"

The Best Little Medium-Duty Marine Engine on the Market

High grade four cycle design, valve-in-head, removable cylinder head, bronze rocker arms, push-rods, plunger pump, etc. Over 200 in actual use.

Immediate deliveries on early orders. Write for catalog and testimonials.

AGENTS AND DEALERS WANTED

A. G. HEBGEN

Manufacturer and Sole Distributor

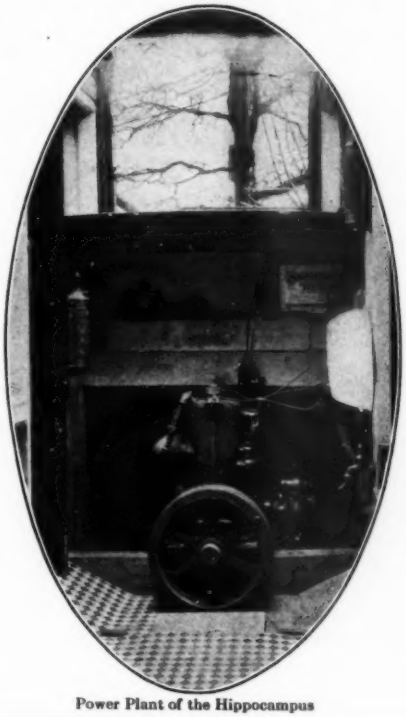
440 Market St., San Francisco, Cal.

3½-4 H.P. 600 to 750 R. P. M.

Also built in "Liberty Twin" Double Cylinder Model giving 8-10 H.P., for gasoline or kerosene

Advertising Index will be found on page 110

We Have a Palmer Ready for Your Boat



Power Plant of the Hippocampus

No matter what use you put your boat to one of the Palmer Family will serve the purpose with 100 per cent. dependability and economy.

1 to 6 Cylinder–2½ to 85 Horsepower

Information as to the most suitable power plant for your boat as well as our Reduced Price List will gladly be sent you.

PALMER BROTHERS ENGINES, Inc.

COS COB, CONN.

Branches and Distributers

New York Norfolk Seattle Vancouver
Philadelphia Baltimore Portland, Me.

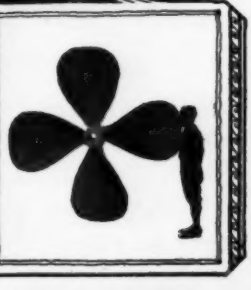
Columbian Bronze Propellers

Vincent Astor's New Yacht Is Equipt with Columbian Bronze Propellers

VINCENT ASTOR'S new boat "Nourmahal," the largest Diesel Driven Yacht in the world is equipt with a pair of Columbian Bronze propellers.

"Nourmahal" is 160' x 25'6" x 10', was built by Robert Jacob, from designs by Cox & Stevens. The power plant consists of a pair of six-cylinder Winton Diesel Engines developing 350 H.P.

No matter whether it be an 18-foot Runabout, a boat such as the "Nourmahal," or a big Cargo Carrier, there is a Columbian Bronze Propeller designed and built to give maximum speed and efficiency.



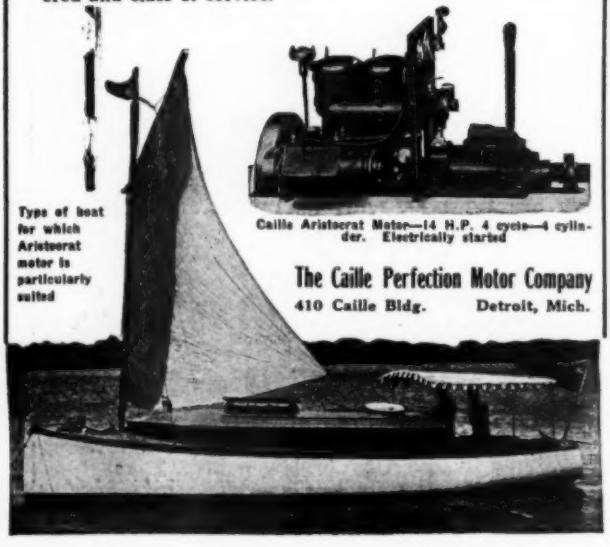
Write today for the Columbian Bronze Propeller Catalog

COLUMBIAN BRONZE CORPORATION
522 Fifth Avenue New York City
For New York Local Sales Only:—44 Third Ave.

CAILLE

MARINE MOTORS 2½ to 20 H.P.

FOR nearly a quarter of a century we have confined ourselves to producing motors particularly suited for pleasure and work boats up to 35 feet in length. As a result of this concentrated specialization, Caille motors, for this type of craft, are renowned the world over. We build them in sizes ranging from 2½ to 20 H.P.—one to four cylinder designs—2 and 4 cycle types—fitted for salt or fresh water and to operate on gasoline or kerosene. Send for catalog and state size of boat to be powered and class of service.



Type of boat for which Aristocrat motor is particularly suited

Caille Aristocrat Motor—14 H.P. 4 cycle—4 cylinder. Electrically started

The Caille Perfection Motor Company

410 Caille Bldg. Detroit, Mich.

"Those who go to sea must be able to see."

Comet Marine Generators

A NEW LIGHTING UNIT

for the open motor boat or any installation where it is not convenient to install a regular switchboard.

MS Control on T-65 Generator

Comet Generators with MS CONTROL combine in one unit generator, reverse current relay, switch and fuse.

MS Control may be mounted on any size Comet Marine Generator. Easy to install, simple and efficient.

Send for Bulletin No. 5.

COMET ELECTRIC CO.

1241 St. Paul St. Indianapolis, Ind.

The Woods and Smiths Keep the British International Trophy in the United States

(*Continued from page* 54)

in an appearance until a few seconds before the time for the starting gun. She was seen coming down the river toward the starting line and at the crack of the gun she was off leading the field. It was 12.94 seconds after 4 o'clock that Maple Leaf VII crossed the line, 15.22 when Miss America II crossed, 16.79 when Miss America I started and when Miss Chicago was on her way the official chronometer recorded 40:00:17.09.

The start provided the only thrill of the entire race. If Maple Leaf VII had any speed she showed it at the start. The American boats were all so determined that the lead of the Englishman should not be long lived that all four boats made for the first turning buoy, about half a mile downstream, at about the best speed of which they were capable. Both Miss America I and Miss America II had caught Maple Leaf VII at the first turn only a half mile from the start. But after that the race was over. The American boats passed the foreigner almost as though she were anchored. Even little Miss Chicago with less than one-fourth the power of Maple Leaf was putting up the gamest kind of a fight to pass her and was apparently doing it.

The race was scheduled to be 40 nautical miles in length which is equivalent to 46.06 statute miles. It was eight times around a 5 nautical mile course. Contrary to American practice the race was run leaving all turning buoys to starboard instead of to port. This is the common way of running races in England and the Detroiters arranged this event in this direction in courtesy to the English visitors.

At the end of the first 5 nautical mile lap Miss America I was leading being about 10 seconds ahead of Miss America II which was 37 seconds ahead of Maple Leaf. Miss Chicago was last finishing the first heat, 10 seconds behind the English boat.

On the up stretch Miss Chicago passed Maple Leaf which from that moment on gradually slowed down and at the end of another half mile stopped altogether. A number of patrol boats passed her line and towed her in to one of the adjacent slips where she sank as soon as she reached shoal water. The entire bottom of Maple Leaf VII had apparently weakened, it being of too light a construction to withstand the tremendous water pressures resulting from such a speed. A number of other minor defects developed in Maple Leaf VII during her short career which proved without question that if her bottom had not given way she would have had neither the speed or the lasting qualities to run a real race with boats of the type of those comprising the American team.

After the withdrawal of Maple Leaf VII the American boats slowed down, finishing rather easily. The speed of Miss America II was at the rate of 59.8 statute miles an hour for the 40 nautical miles. Her best lap of 5 nautical miles was at the rate of 71.1 miles per hour.

After the race Gar Wood and the others of the American crews offered Colonel Tate the privilege of making repairs to Maple Leaf and competing in another heat at any time he might desire. However, the driver of Maple Leaf well knew the hopelessness of competing against such boats as Miss America I and Miss America II so he declined the offer and joined the thousands present in congratulating Commodore Wood.

(A full summary of the times will be found on page 72.)

Detroit Regatta Huge Success

(*Continued from page* 18)

No complaints of any kind were received about boats getting on the course.

Assisting in the timing and scoring were W. S. Gilbreath of Detroit, Arthur Utz of Buffalo, L. J. Bailey of Bay City, Alex Scott of Detroit, Harry Parsons of Cleveland, L. L. Tripp of Albany, W. E. Gibb of Middletown, Conn., Wilbur F. Young of New York, William Meir and Harry Parr of Cleveland, Commodore W. E. Scripps of Detroit, and others.

As judges all parts of the country were represented. Carl G. Fisher, J. A. Allison and A. C. Newby of Indianapolis, Henry Gielow of New York, George W. Lawley of Boston, Judge William C. Morehead of Milwaukee, Sheldon Clark of Chicago, J. W. Sackrider of Racine, A. T. Griffith of Peoria, Ira Hand of New York, Guy Vaughan of Philadelphia, Henry Ford, Mayor Couzens and Police Commissioner Inches of Detroit, C. A. Criqui, S. B. Eagan, Humphrey Birge and Ralph Sidway of Buffalo all served with distinction.

For the Gold Cup races the only starters were Miss America I, Miss Chicago, Orlo III and Miss Belle Isle. All of these boats were powered with Liberty or ex-Liberty motors. The race consisted of three 50-mile heats and as was to be expected Miss America outclassed in the entire field and won each of the heats without much effort. Miss Chicago, Miss Belle Isle

(*Continued on page* 68)

Advertising Index will be found on page 110

Inverted V-bottom and Surface Propeller Boats

SEA SLED

Hickman Patents in all countries

Trade-Mark Reg. U. S. Pat. Off.

Fisher-Allison Trophy Series, Buffalo, August 11-14, 1921

Mr. George Leary's 35-foot Sea Sled Orlo III established a new world's record for marine-engined displacement boats:—

57.79 statute miles per hour,

breaking the previous record, 47 miles, held by the Sea Sled *Orlo II*, by 10.79 miles.

The best record made by a screw propeller displacement boat was 44.03 statute miles, or over 13 miles slower than the surface propeller Sea Sled.

Orlo III was running at about the same power-weight ratio as the screw propeller boats.

This notable racing result is the final demonstration of the greatly increased efficiency of the Surface Propeller and Sea Sled hull over that of the older type motor boat. It applies not only at these high speeds but at all speeds down to those of the cruiser.

Orlo III also established new 2-mile and 50-mile records, failing to win the Fisher Trophy because of starter and ignition troubles.

THE SEA SLED COMPANY

WEST MYSTIC, CONN.

Stearns-McKay
MARBLEHEAD
ANTI-FOULING GREEN
Bottom Paint

For Cruising or Racing Bottoms
The only Bottom Composition for Tropical or semi-Tropical waters

STEARNS McKAY MFG. CO.
MARBLEHEAD, MASS., U. S. A.

Michigan Marine Motor

Write for Folder Today.

The ENGINE You Have Been Waiting For.

Repairs At Any Ford Garage

$135.00

STURDY—RELIABLE—ECONOMICAL
4-CYCLE—4 H. P. WEIGHT 115 LBS.
Well Worth Investigating.
—USER OR DEALER—
MICHIGAN MARINE MOTOR CORPORATION
7235 E. JEFFERSON AVE. DETROIT, MICHIGAN

Detroit Regatta Huge Success

(*Continued from page* 66)

and Orlo III appeared to be somewhere near the same speed for the short stretches they were able to get going but of the three boats Miss Chicago was the only one having both reliability and speed and she finished second to Miss America I. The fastest speed for a 30-mile heat was only 56.5 miles per hour which is slow compared to a 30-mile heat made in 1920 by Miss America at a speed of 70 miles an hour. The best lap speed also was considerably below that of 1920. (A complete summary of the Gold Cup Races of 1921 as well as a comparison with other years will be found on page 72.)

The Wood-Fisher race perhaps attracted the greatest amount of attention this year of any of the races at Detroit. This is the race which is formed along lines similar to the original Fisher-Allison Race with the exception that any type of power plant of less than 3,000 cubic inch piston displacement is permitted, while in the Fisher-Allison race only out and out marine motors are allowed. The other requirements are practically the same, that is, the race consists of three 50-mile heats around a 2½ mile course, the winner being decided by the point system. The class is open to displacement boats having a water-line length of not less than 32 feet which can show a speed of better than 35 miles an hour. Competing boats are required to exhaust at the stern and must be fitted with three transverse bulkheads, have the motor compartment entirely closed in and have seating accommodation for at least four persons. Motors must be equipped with means of idling or reverse gears and with a self starter. The definition of a displacement runabout differs somewhat from the original Fisher Trophy Race inasmuch as no breaks in the longitudinal or transverse continuity of the immersed surface is allowed and the keel and chine is required to be continuous and to extend from bow to stern. Steps either transverse or longitudinal are not permitted and the surface on each side of the keel line between the keel and the chine must be continuous and not contain breaks, jogs or notches of any description.

In the race for the Wood-Fisher Trophy only minor repairs to hull, power plant and accessories are allowed and these must be made only by members of the crew and during racing time. Parts used for minor repairs must be taken from those carried aboard the boat during the race. After each boat has finished a heat it is required to report to the Race Committee and is under the absolute control of the Race Committee until 15 minutes before the start of the next race. During this time no changes, repairs, adjustments or work of any nature upon the power plant, hull or accessories is allowed. A boat which does not finish one heat of a race is not permitted to compete in the second heat.

The whole object of the rules governing the Wood-Fisher Race is to develop a healthy, serviceable type of runabout. In this respect the three boats which appeared for the start were exactly the type of boat which it was intended to develop. While only one of these was built for the Wood-Fisher Race, yet the other two powered with marine motors were designed and built for the Fisher-Allison event and competed in the Wood-Fisher Contest not so much with the idea of winning but to demonstrate their reliability and running qualities. In this respect both boats were a decided success although they had not the necessary power to be real competitors of the boat which greatly exceeded them in amount of power.

Baby Gar, the winning boat, is a new craft entered by Commodore Gar Wood. She is just over 32 feet in length and was designed and built by Jay Smith of Algonac. She is powered with a single Twin-six Smith motor and is about the finest type of runabout yet produced. She had seating accommodations for some six or eight people, drove from a forward cockpit, turned well, was seaworthy and could go at a speed close on to a mile a minute. The motor in Baby Gar was located under hatches amidships. The shaft led forward to a gear box and then aft to the propeller.

Nick Nack, the 32-foot Hacker runabout powered with a six cylinder Hall-Scott motor and owned by Commodore Humphrey Birge, of Buffalo, was the boat which was entered for the Fisher-Allison Race at Buffalo in August but which was not completed in time to take part.

The third entry was Aye, Aye Sir owned by Carl G. Fisher of Indianapolis, and powered with a 12 cylinder, 450 h. p. Allison motor.

Orlo III, owned by George Leary of New York, was also entered but due to a misunderstanding in allowable piston limitations this boat competed unofficially as she was powered with two Liberty motors which in piston displacement was above the 3,000 cubic inch limit. The owner and designer of this boat was informed several months ago and several times since that his entry of a boat powered with two Liberty motors would not be acceptable inasmuch as the limit of 3,000 cubic inches had been decided upon for this race by the donors of the Wood-Fisher Trophy. It is not clear to many just why those in charge

(*Continued on page* 74)

Skaneateles Boats

"The standard by which others are judged"

BOAT PRICES REDUCED TO PRE-WAR LEVELS

It is our pleasure to announce that we have reduced our boat prices to practically the 1914 level.

Two things have allowed us to attain this end. Our employees voted a substantial reduction in their wages, which means a labor saving of thousands of dollars a year. The other reason is that we now have our mammoth stocks of lumber which we have been air drying for two years to draw upon. This means that no other boat builders will be able to compete with us in price and quality unless they purchased large stocks of green boat lumber at the close of the war.

We strongly advise prospective boat buyers to place their orders for next season as early as possible to insure their having their boat when it is wanted, as this price reduction will undoubtedly mean that Skaneateles Boats will be sold out for months ahead as in past years.

In our twenty-nine years of business we are yet to have our first dissatisfied customer. We believe that this record is unequalled in the boating world.

Full descriptive catalogue upon request

SKANEATELES BOAT & CANOE CO.

SKANEATELES NEW YORK

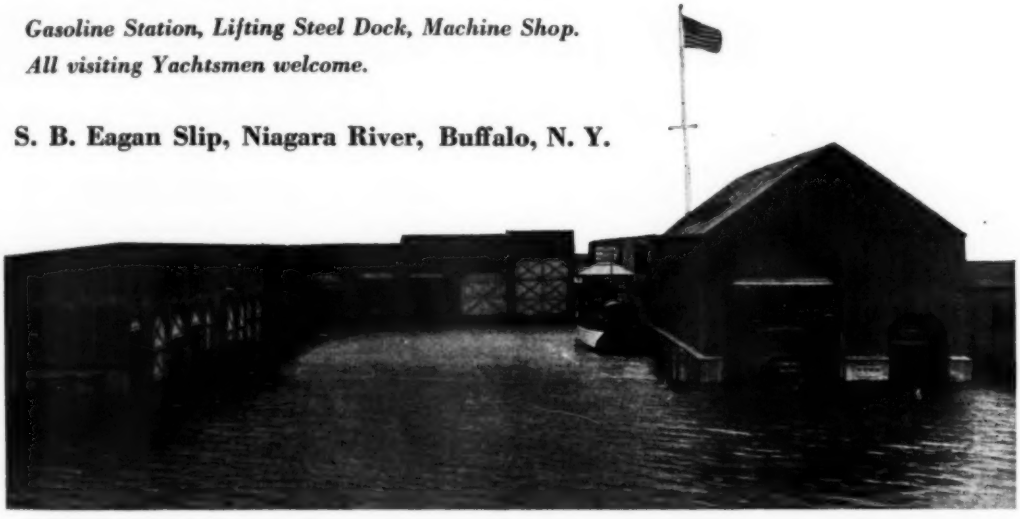
Builders of the finest row boats in the world

S. B. Eagan Slip

The finest Marine Basin in North America for Motor Craft. Made the staging of the Fisher-Allison Trophy Race in Buffalo feasible. Boathouses available to Buffalonians to house their craft with unsurpassed facilities and at only a maintenance rental. You can own and operate a motorboat at less proportionate expense than an automobile, with far greater return in health and pleasure.

Gasoline Station, Lifting Steel Dock, Machine Shop.
All visiting Yachtsmen welcome.

S. B. Eagan Slip, Niagara River, Buffalo, N. Y.



Gray Burned Gas Compressor For Storing Whistle Tanks

"Now one of the 1001 WC Products"

A SIMPLE, safe, dependable compressor for storing whistle tanks with burned gas from the cylinder.

A patented piston check valve controlled by an adjustable spring is lifted by the explosion in the cylinder, allowing burned gas to pass around the piston. Before the gas reaches the whistle tank it comes in contact with water-cooled walls and is further cooled by passing through ten feet of tubing. The compressor is waterjacketed, and cannot overheat.

No compression lost. When tank is full, valve automatically shuts off pressure. Will store 75 to 125 pounds on most motors. Can be fitted to any gas engine having a priming cup. Send for special literature.

Get This Book of Helpful Hints for Motor Boaters

"Sea Craft Suggestions and Supplies" solves those daily "puzzlers" that few know how to handle. Tells how to Box the Compass; what is Proper Ground Tackle; gives hints on Steering Gear, etc.; describes WC Dependable Marine Hardware; tells uses. Compiled from 70 years' experience in making marine fittings. Sent prepaid for 50c.

WILCOX, CRITTENDEN & CO., Inc., 4 South Main St., Middletown, Conn.
ESTABLISHED 1847

Advertising Index will be found on page 110

KERMATH

ABSOLUTE RELIABILITY WINS TIME PRIZE FOR KERMATH

THE unfaltering dependability of the 40 horsepower Kermath engine gave NAMID the time prize in the famous Scripps Reliability long distance classic from Rocky River to Put-in-Bay and return, also NAMID made fastest time that has ever been made in any Scripps Trophy race.

Starting 19th in a field of 21 starters, NAMID ran steadily for more than 3 hours without passing a single competitor. Then came the storm, and the sturdy reliability of the Kermath asserted itself so effectively that 40 minutes later, when the 60-mile gale was over, NAMID was in the 12th position, having passed seven boats during the gale.

All night long the engine sang its steady song. Every 30 minutes the official observer of the Cleveland Yacht Club took the revolutions of the engine, and never once did he have cause to say "the revolutions have fallen down." NAMID was rated at 850 revolutions per minute, the engine turning a big three-bladed 22 inch Hyde propeller, and 850 it was all night long. This same boat tied for 3rd in Sallan Trophy races at Detroit Regatta, Sept. 6th, against a large field of entries.

If you are looking for a marine engine that will give service—steady dependable service—do not fail to look up the local Kermath dealer, and in the meantime write our Dept. "D" for the Kermath booklet. It has the information that you are looking for and lists the full line of Kermath motors.

"A KERMATH ALWAYS RUNS"

KERMATH M'f'g Co.
DETROIT MICHIGAN.
5880 Commonwealth Avenue

Summary of Results 1921 Detroit Regatta

Nineteenth Race for the American Power Boat Association Gold Challenge Cup—Detroit River, August 27, 29 and 30, 1921. (3 heats; first two 30 miles each, 3rd, 10 miles.)

Winning Boat, 1921	Elapsed Time H.M.S.	Speed M.P.H.
First heat, Miss America	31:52	56.5
Second heat, Miss America	35:43	50.5
Third heat, Miss America	12:53 (1)	46.5
Total race, Miss America	1:20:28 (2)	52.1

(1) Third heat, 1921, 10 miles.
(2) 70 miles, 1921.

Speed M. P. H., 1921—Fastest Lap—5 Miles

	First Heat	Second Heat	Third Heat
Miss America	62.45	54.7	49.0
Miss Chicago	62.2	51.5	41.5
Orlo III	D.N.S.	50.15	D.N.S.

Fastest Speed for Heat (30 Miles) Since 1916—Miles Per Hour

	1921	1920	1919	1918	1917	1916
First heat	56.5	60.0	43.3	52.1	50.7	46.2
Second heat	50.5	56.6	30.3	51.0	56.3	49.5
Third heat	46.5 (1)	70.0	55.0	53.0	56.5	50.0
Total race (90 miles)	52.1	62.0	40.2	51.04	54.14	48.6

(1) Third heat, 1921, 10 miles.

.* Speed M. P. H., Fastest Lap Other Years

	1920	1919	1918	1917	1916
First heat	63.6	48.0	59.3	52.74	51.20
Second heat	63.3	42.4	55.9	59.43	55.35
Third heat	71.4	58.5	55.0	59.43	55.78

* Two and a half miles to the lap in 1919, five miles other years.

Gold Cup Record for 1 Complete Heat

Made by Miss America I at Detroit in 1920. Speed 70.0 M.P.H.

Gold Cup Record for Complete Race (3 heats)

Made by Miss America I at Detroit in 1920. Speed 62.0 M.P.H.

Gold Cup Record for Fastest Lap (5 miles)

Made by Miss America I at Detroit in 1920. Speed 71.4 M.P.H.

Complete Summary of 19th Annual Race for A. P. B. A. Gold Challenge Trophy—Two Heats of 30 Statute Miles Each and One Heat of 10 Statute Miles—Detroit River, August 27, 29, and 30, 1921.

Boat	Club	Time 1st Heat	Speed 1st Heat	Time 2nd Heat	Speed 2nd Heat	Time 3rd Heat	Speed 3rd Heat	Time Total Race	Speed Total Race
Miss America	Detroit Yacht Club	31:52	56.5	35:43	50.5	12:53	46.5	1:20:28	52.1
Miss Chicago	Chicago Yacht Club	35:15	51.0	36:31	49.4	14:33	41.2	1:26:19	48.7
Orlo III	Motor Boat Club of America	D.N.S.	....	37:47	48.2	D.N.S.	....	D.N.F.	....

Complete Summary of First Race for Wood-Fisher Trophy Representing A. P. B. A. Free for All Displacement Boat Championship of America—Detroit River, August 27, 29 and 30, 1921. Three Heats of 50 Miles Each. (Open to Displacement Runabouts of over 32 feet in length, powered with motors having a total piston displacement of not over 3,000 cubic inches.)

Boat	Owner	Motor	Cu. in. Piston Displacement	Time 1st Race	Speed 1st Race	Time 2nd Heat	Speed 2nd Heat	Time 3rd Heat	Speed 3rd Heat	Time Total Race	Speed Total Race
Baby Gar	Gar Wood	1450 h.p. Liberty	1649	1:09:33	43.1	1:13:52	40.7	1:07:52	44.2	3:31:17	42.6
Nick Nack	Humphrey Birge	1200 h.p. Hall-Scott	825	1:12:32	41.3	1:14:37	40.15	1:14:06	40.5	3:41:15	40.6
Aye, Aye Sir	Carl G. Fisher	1400 h.p. Miami	2138	1:16.03	39.4	1:20:26	37.4	1:20:41	37.2	3:57:10	38.0
Orlo III*	George Leary, Jr.	2900 h.p. Liberty	3299	1:10:11	42.6	D.N.F.	D.N.F.	1:15:50	39.45	D.N.F.	—

* Orlo III had 3299 cubic inch piston displacement but was permitted to run under protest.

RACE FOR EXPRESS CRUISERS 24.1 MILES

Boat	Owner	Club	Motor	Elapsed Time
Miss Liberty II	H. Birge	Buffalo Launch	2 Sterling	1:02:34
Betty M	C. W. Kotcher	Detroit	2 Van Blerck	1:04:06
Sea Horse	J. A. Allison	Miami Beach	2 Miami	1:04:54
Gowan		Detroit	1 Liberty	D.N.F.

RACES FOR RUNABOUTS 15 MILES

Boat	Owner	Elapsed Time	Speed M.P.H.
Bee	C. F. Bornman	28:33	31.55
Miss Pep	C. W. Mathews	28:45	31.3
Bear Cat II	E. M. Gregory	28:50	30.2
Roamer	C. S. Morgan	30:03	29.9
Lois Jean	L. Burch	Did not finish	

Complete Summary of 12th Race for British International (Harmsworth) Trophy—Detroit River, September 5, 1921. One Heat 40 Nautical Miles, 46.06 Statute Miles, 8 Laps of 5.758 Statute Miles Each. (Time in minutes, seconds and tenths.)

Boat	Owner	Country	TIME BY LAPS 1st lap	2nd lap	3rd lap	4th lap	5th lap	6th lap	7th lap	8th lap
Miss America I	Gar Wood, Jr.	U. S.	5:31.72	6:02.98	6:00.49	5:06.78	Withdrew, did not finish.			
Miss America II	Gar Wood	U. S.	5:43.33	6:14.13	5:44.46	4:51.67	5:05.31	6:07.38	6:08.46	5:06.27
Miss Chicago	Sheldon Clark	U. S.	6:28.86	6:46.12	7:07.27	6:34.85	6:42.29	6:55.49	7:04.44	6:50.18
Maple Leaf VII	Sir Mackay Edgar	England	6:22.80	Sunk, did not finish.						

Boat	Owner	Elapsed Time Total Race	Speed Total Race M.P.H.	Speed Fastest Lap M.P.H.
Miss America I	Gar Wood, Jr.	D.N.F.	...	62.5
Miss America II	Gar Wood	46:16.23	59.8	71.1
Miss Chicago	Sheldon Clark	54:47.59	50.3	53.5
Maple Leaf VII	Sir Mackay Edgar	D.N.F.	...	54.1

Speeds Made in A. P. B. A. One Mile Speed Trials—Detroit River, August 31 and September 6, 1921

(Three runs down stream and three runs up stream)

	Average of 6 One Mile Runs Miles Per Hour	Best One Mile Down Stream
Miss America II	80.567	81.577
Miss America I	74.87	76.676
Miss Chicago	70.95	72.83

Former A. P. B. A. Records—One Mile

1920—Miss America I	Av. 76.655
1918—Whip-po' Will, Jr.	" 63.498
1917—Miss Detroit II	" 61.724
1916—Miss Minneapolis	" 61.083
1915—Tech, Jr.	" 53.70
1914—Baby Speed Demon	" 51.726

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Dependable Spark Plugs

Rainbow I, World's Champion Runabout. Winner of the Fisher-Allison Trophy Race for the second time. The faultless performance of Rainbow's Sterling engine was made possible by the faultless performance of the Champion Spark Plugs used.

Miss America, the fastest boat in the world, uses Champion Plugs in all her races.

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For Champion Plugs were used in all competing boats with one exception, including all of the winners. And not a moment's time was lost to spark plug trouble in the Champion equipped boats.

Rainbow I, Rainbow II, Miss Sterling, Adieu, Aye Aye Sir, all proved that successful boat racing is no longer a question of spark plug durability—providing Champion Plugs are used.

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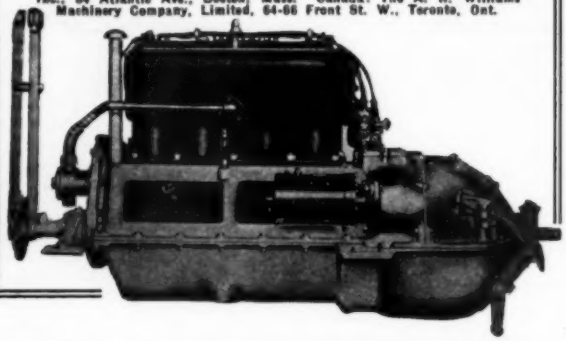

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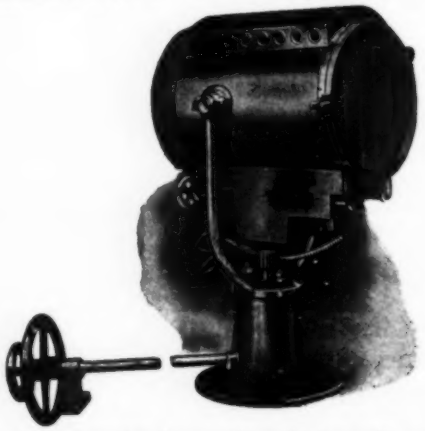

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THE CARLISLE & FINCH COMPANY
261 East Clifton Ave. Cincinnati, Ohio

Detroit Regatta Huge Success

(*Continued from page* 68)

of this boat persisted in racing her in this class against boats of one-half and one-third the power, especially in view of the fact that Orlo III competed in the Fisher-Allison race at Buffalo only a few weeks previous and was at that time powered with two marine motors having a total piston displacement of less than 3,000 cubic inches. It is said that only a few days before the Detroit races the two marine motors were taken out of Orlo III and the two Liberties installed. The record of speed made by Orlo III at Detroit was decidedly slower and poorer than at Buffalo when she was powered with the marine motors. It is thought by many that this boat was a failure with the larger power inasmuch as she appeared to be unmanageable on several occasions during the Detroit races and at no time showed a speed which appeared to be in keeping with the outfit.

Baby Gar with Gar Wood at the wheel and her designer and builder, Jay Smith, enjoying a joy ride in the cockpit aft won each of the 50-mile heats without apparent effort. Her speed for the first race was 43.1 miles per hour, in the second 40.7 per hour and in the third 44.2 miles per hour—all of these considerably faster than a displacement runabout has ever shown before. Baby Gar's best lap in the first heat was made at a speed of 43.7 miles per hour, in the second heat her fastest lap was at the rate of 43.2 miles per hour and in the third heat her best 2½ mile lap was at a speed of 46.5 miles per hour.

Nick Nack, driven by Commodore Ericson of Toronto, proved a good second in each heat. No trouble whatsoever was experienced with the Hall-Scott power plant during the 150 miles of racing. Commodore Ericson steered a very fine race and covered the course in the least possible distance. Nick Nack established several new world's records for runabouts powered with marine motors. In the first heat she averaged 41.3 miles per hour for the 50 miles and showed a speed of 42.15 miles an hour on her best lap. Nick Nack's time for the completed race of 150 miles was 3 hours 41 minutes 15 seconds which is at the rate of 40.7 miles per hour—all of these decidedly creditable performances for a boat powered with a marine motor. The Detroit course was elliptical in shape, 2½ miles to the lap, while the one at Buffalo, where Rainbow made her records, was only 2 miles, with two hairpin turns. Nick Nack was designed and built by John L. Hacker of Detroit, who deserves a great deal of credit for turning ont such a reliable and serviceable craft.

Aye, Aye Sir, of course, lacked the necessary speed for her to be up with the winners at the finish. However, the running of this boat was as steady and as consistent as it has been in all the racing events in which she has participated this year. In the first heat she averaged 39.4 miles per hour, in the second 37.4 and 37.2 in the third heat.

Perhaps the keenest competition in the whole regatta occurred in the first two heats for the Detroit Trophy. This was a race consisting of three 30-mile heats open to hydroplanes powered with a single engine for a trophy offered by Mayor Couzens of Detroit. Miss Chicago, Baby Sure Cure owned by Paul Strasburg, and Miss Belle Isle II were entered for this race.

In the first heat, which was around a 5 statute mile course it was nip and tuck between Miss Chicago and Baby Sure Cure every inch of the way for the first four laps with Miss Chicago leading by a couple of lengths most of the time. However, in the fifth lap Miss Chicago had trouble with her gasoline line becoming clogged with a piece of solder and Baby Sure Cure went into the lead, finishing approximately five minutes ahead of Miss Chicago. Baby Sure Cure's speed for the heat was at the rate of 58.7 miles an hour with the fastest lap at 62.2 miles per hour.

In the second heat for the Detroit Trophy, Baby Sure Cure did not get started until after Miss Chicago had finished one complete lap. However, she then set such a pace to overtake Miss Chicago that her speed combined with the choppy water at the upper turn was too much for her and she overturned, throwing out her driver and the mechanician and injuring both of them quite severely. Miss Belle Isle II also started in this heat but owing to the fact that she cut a number of stakes she was disqualified.

Miss Chicago was the only starter in the third heat for the Detroit Trophy. After she had completed two laps of the total distance the officials called her in and awarded her the race.

In the cruiser events the three heats for the Sallan Trophy and other trophies presented by the merchants of Detroit were very hotly contested for. This was a handicap event with time allowances based on actual performances of the boats. The handicaps were changed each day depending upon the speed of the boat in the previous day's heat. While the results of the race did not show very much and little or no premium was placed upon efficiency of hull and power plant or skill of navigating, yet the race proved a very popular one and not until the last boat had finished the third heat was the name of the winner known or the order of the finishes of the other boats determined. Twenty-one cruisers of all sizes and descriptions varying in speed from 8½ miles an hour up to nearly 15 started in the third

(*Continued on page* 78)

Advertising Index will be found on page 110

DIESEL ENGINES for PLEASURE YACHTS

IDEALIA, 84′ x 14′ x 3′, is powered with a 120 H.P. NELSECO Diesel engine which drives her 14¼ miles per hour, using only six gallons of fuel oil per hour. It would take 15 gallons of gasoline to produce the same power, *at approximately ten times the cost.*

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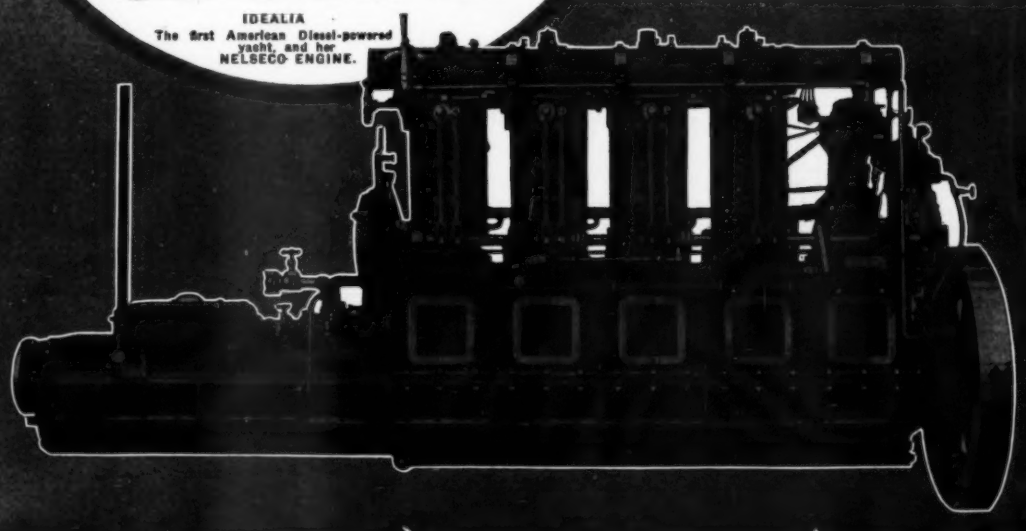

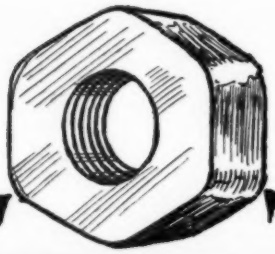

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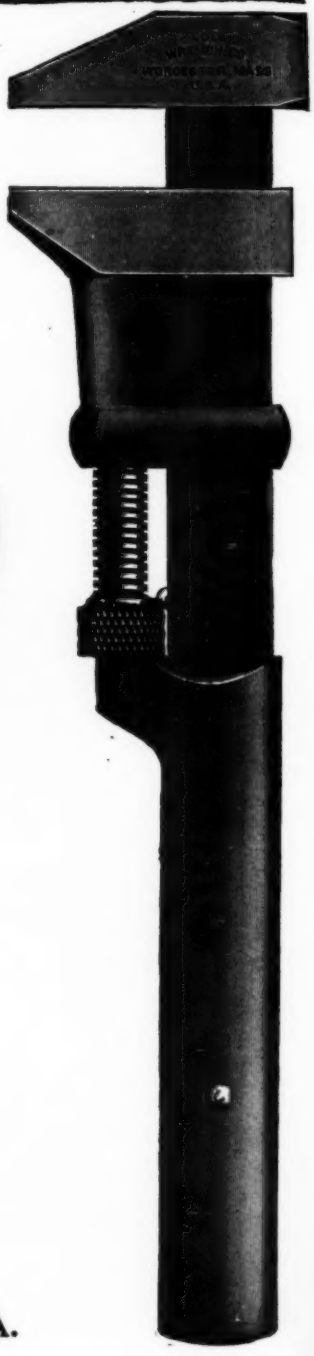

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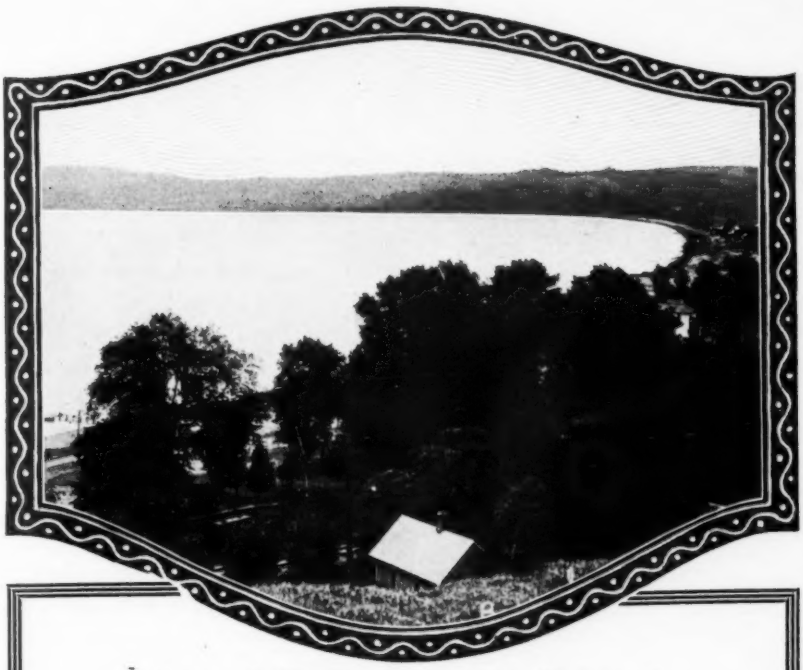

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Twenty-five miles for twenty-five cents! A penny a mile for "gas" and oil is all it costs to operate an Evinrude. And you pay only $10 a year for this efficient little motor, dividing its price by its life. What other outdoor sport is half so economical?

The Evinrude is the world's standard power plant for watercraft, gradually developed and perfected by a great organization through a period of years. Its dependable, vibrationless power is known wherever navigable water flows.

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Two Horse Power
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EVINRUDE

DETACHABLE MOTOR FOR WATERCRAFT

Detroit Regatta Huge Success

(*Continued from page 74*)

heat. White Cap II, owned by C. A. Peckham of the Toledo Yacht Club, took first honors in the first heat followed only a fraction of a second later by 2 P. M., which was one second ahead of Pauline. As the boats were started on their handicap time and most of the twenty-one starters finished within five minutes of each other the action at the finish was thrilling.

The second heat was won by Commodore A. A. Schantz of the Detroit Yacht Club with his Silver Heels II. White Cap II and 2 P. M. were tied for second place and Mary Ken, owned by K. N. Devoss, of the Detroit Yacht Club, was fourth. In the third heat 2 P. M., owned by Vice Commodore C. D. Cutting of the Detroit Yacht Club, was again first, Namid, owned by Jack Farr of the Detroit Yacht Club, took second place and North Star, owned by S. Sabo of the Cleveland Yacht Club, was third.

As the winner of the whole event was decided by the point system and after the results of the three heats had been calculated it was shown that 2 P. M. was first, White Cap II second and Silver Heels third. (A complete summary of the results of the Sallan Trophy race will be found below.)

In the official American Power Boat Association one-mile trials for the Lake George Trophy, four boats took part. In this race the boats run six one-mile dashes against time, three of which are downstream with the current and the remaining three upstream against the current. The winner is determined by the one which shows the best average speed for the six runs. As in the other events the timing was done electrically and there was telephone connection between the two ends of the one-mile course.

Miss America II's average for the six runs was at the rate of 80.567 miles per hour—a new world's record for anything afloat. Miss America I averaged 74.87 miles per hour and Miss Chicago 70.95 miles per hour. Orlo III also competed in the mile trials but due to the fact that her speed was slower than in the mile trials at Buffalo when the same hull was powered with two marine motors of less power instead of two aviation motors as at Detroit she withdrew from the official running.

One of the most interesting features of the Regatta and one that appealed greatly to the thousands along the shore was the impromptu race for the Detroit Automobile Club Trophy, and the "water circus" that followed.

Owing to the cancellation of the Scripps Motor Company Trophy race, Capt. W. S. Gilbreath offered to present a trophy, and two additional prizes were donated by Spater & Walser and J. C. Armstrong, for a free-for-all runabout race.

The entries were all boats built by the Belle Isle Boat & Engine Company of Detroit, four of them being of the famous Bear Cat model. These are standardized stock boats, noted not only for their speed, but also for their remarkable maneuvering ability and all powered with 4-cylinder Hall-Scott Marine Motors.

After the race which was won by the Bear Cat Bee, owned by C. F. Bornman, closely followed by G. W. Mathews' Bear Cat Miss Pep, the Bear Cat fleet put on a water circus, to show the wonderful maneuvering ability of this type boat. Dashing and turning about in the space between the Yacht Club dock and the judges' float, the boats wove complicated figures about each other at top speed, cutting figure eights and aquatic tail-spins like a school of porpoises gone crazy. They crossed bows by margins closely approaching zero, they drove and splashed over the multiplicity of wakes and gave the spectators more genuine thrills than many of them probably will get even from the Harmsworth event because of the ever present element of danger.

On Thursday afternoon the elimination contests to determine the three American defenders of the Harmsworth Trophy was called off as only three boats were entered. In order therefore to give the crowds along the shore some excitement the Bear Cats repeated the maneuvering stunts they had gone through the previous Sunday. Douglas McLean, the movie star, was an active participant, riding with Mr. Gregory in the Bear Cat II.

The News Trophy race, a handicap contest for runabouts, was run in three heats of 20 nautical miles (23.03 statute miles) each on Sunday, Monday and Tuesday. In this event there were eight entries, seven of them being Belle Isle Boat & Engine Company's boats and five of the seven being of the Bear Cat model. Bear Cat I, owned by Richard Locke, finished first, winning the handsome silver plaque donated by the Detroit News. C. Stanley Morgan's Roamer, also a Bear Cat Model, took second prize and the third place went to another Bear Cat, Bee, owned by C. F. Bornman.

The average time made by the Bear Cats in each heat was approximately 43 minutes or at the rate of better than 32 miles per hour for the circular course.

Sialia, Jr., owned by Edsel Ford of Detroit, also competed in the Handicap Runabout Race for the Detroit News Trophy. This boat, as were also all the eight starters in this race, was equipped with a Hall-Scott Marine Motor. Siala, Jr., which was driven by Mr. Ford himself, was the fastest boat and was awarded the prizes for the fastest lap and the fastest heat. Mr. Ford drove an excellent and consistent race at all times, and while on corrected time he finished only fourth, yet this was due to a large extent to the handicapping system used.

A complete summary of this race will be found below. .

Summary of Race for Mayor Couzens Detroit Trophy. Two Heats of 30 Miles Each and One Heat of 10 Miles. Detroit River, August 27, 29 and 30, 1921. (Open to single engine hydroplanes.)

Boat	Owner	Time 1st Heat	Speed 1st Heat	Time 2nd Heat	Speed 2nd Heat	Time 3rd Heat	Speed 3rd Heat
Miss Chicago	Sheldon Clark	35:09	51.2	34:04	52.9	20:02	29.2
Baby Sure Cure	Paul Strasburg	30:40	58.5	D.N.F.	...	D.N.S.	D.N.S.
Miss Belle Isle II	Mr. Shippecasse	D.N.S.	...	*	...	D.N.S.	D.N.S.

* Disqualified for cutting buoys.

SALLAN TROPHY RACE FOR CRUISERS—3 HEATS 25 MILES EACH

Boat	Owner	Club	Elapsed Time First Heat	Elapsed Time Second Heat	Elapsed Time Third Heat	Total Points	Position
White Cap II	C. A. Peckham	Toledo Yach Club	2:44:22.10	2:02:06.16	1:56:52.29	107½	2
2 P. M.	C. D. Cutting	Detroit Yacht Club	2:44:22.67	2:00:42.98	1:36:53.72	111½	1
Pauline	Dr. O. T. Toepel	Detroit Yacht Club	2:45:22.74	3:05:31.95	2:45:53.71	85	11
Idylese	T. Duff	Royal Canadian Yacht Club	2:45:57.53	2:13:34.64	1:50:27.33	98	6
Silver Heels II	A. A. Schantz	Detroit Yacht Club	2:46:01.52	2:07:34.52	2:07:24.95	101	3
Lilli Vesta	T. F. A. Osius	Detroit Yacht Club	2:46:31.41	2:46:55.59	2:44:35 61	91	7
Cigarette	C. B. Truxell	Cleveland Yacht Club	2:47:13.51	2:50:59.87	2:49:42.07	81	14
Cresceus	A. I. McLeod	Detroit Yacht Club	2:47:19.04	2:42:36.85	2:41:40.66	81	13
Namid	J. Farr	Detroit Yacht Club	2:47:33.95	2:41:03.69	2:17:22.82	101	4
Pidando	G. E. Gaddis	Detroit Yacht Club	2:49:10.20	2:10:40.36	2:12:22.95	83	12
Mary-Ken	K. M. De Voss	Detroit Yacht Club	2:44:30.35	2:22:51.14	2:19:35.01	98	5
Arbutus II	Dr. G. H. Voelkner	Detroit Yacht Club	2:51:10.26	2:54:24.36	2:46:23.12	90	8
Elco	S. O. Richardson	Toledo Yacht Club	2:51:21.58	2:28:19.69	2:29:56.53	75	15
Awandra	J. J. Miller	Detroit Yacht Club	2:53:13.35	2:42:25.03	2:41:05.01	88	9
North Star	S. Sabo	Cleveland Yacht Club	3:01:18.69	2:29:10.69	2:29:50.93	85	10
Merry G	L. M. Staley	Cleveland Yacht Club	3:02:14.86	3:18:54.61	3:23:01.20	69	16
Pirate	L. Merrill	Detroit Yacht Club	3:12:41.51	Withdrawn	.....	21	..
Babo	K. North	Cleveland Yacht Club	.....	—Burned out Withdrawn —D.N.S.	.....	..	..
Susanne	C. M. Ross	Detroit Yahht Club	.....	2:38:45.56	2:38:45.89	63	17
Poppy	A. C. Smith	Put-In-Bay Yacht Club	.....	Withdrawn	.....	..	..
Winona	———	.....	3:10:36.64	2:33:30.84	Did not start	43	18

Handicap Runabout Race for Detroit News Trophy—3 Heats of 23.03 Miles Each

Boat	Owner	Position at Finish	Elapsed Time 1st Heat	Elapsed Time 2nd Heat	Elapsed Time 3rd Heat
Bear Cat I	R. Locke	1	47:60	45:36	44:44
Roamer	C. S. Morgan	2	50:26	50:11	49:57
Bee	C. F. Bornman	3	42:20	41:57	41:50
Sialia, Jr.	Edsel Ford	4	50:49	39:06	40:01
Beat Cat II	E. M. Gregory	5	43:32	42:47	47:57
Lois Jean	L. Burch	6	47:13	53:08	D.N.S.
Miss Pep	G. W. Mathews	7	50:49	47:08	D.N.F.
Maybelle	W. T. Lajoie	8	45:44	47:55	D.N.S.

Fastest heat prize won by Sialia, Jr.—Edsel Ford, owner.
Fastest lap prize won by Sialia, Jr.—Edsel Ford, owner.

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Alacrity	K. Van Riper	Pr. 6-cyl. 9 x14
Albacore	Price Bros.	Pr. 6-cyl. 9 x14
Albion	F. S. Fish	1 6-cyl. 6½x 9
Amie Jean	E. P. Lawson	1 6-cyl. 6½x 9
Boomerang II	Houston Wyeth	Pr. 6-cyl. 6½x 9
Captiva	Payne Whitney	Pr. 6-cyl. 9 x14
Chelsea	John Harriss	Pr. 6-cyl. 6½x 9
Chieftain	A. W. Armour	Pr. 6-cyl. 8¼x11
Conewago	J. D. Cameron	Pr. 6-cyl. 6½x 9
Donaire	U. S. Navy	Pr. 6-cyl. 6½x 9
Elkhorn	F. E. Horr	Pr. 6-cyl. 8 x11
Evergia Des	R. M. Thompson	Pr. 6-cyl. 8 x11
Flora Del Mar	W. F. Blaisdell	1 6-cyl. 6½x 9
Florence	Julian Detmar	Pr. 6-cyl. 9 x14
Gadfly	Robt. Cassatt	Pr. 6-cyl. 8 x11
Geraldine	F. S. Fish	1 6-cyl. 6½x 9
Gloriana	Don Lee	Pr. 6-cyl. 6½x 9
Hibiscus	Mrs. M. A. Van Buren	1 6-cyl. 6½x 9
Kemah	E. W. Scripps	Pr. 6-cyl. 8 x11
La Mer	Jos. K. Knapp	Pr. 6-cyl. 6½x 9
Lady Grace	F. S. Fish	Pr. 6-cyl. 6½x 9
Lady Mary	F. D. M. Strachan	Pr. 6-cyl. 6½x 9
Lieut. Neary	U. S. Govt.	Pr. 6-cyl. 8 x11
Lieut. Cheney	U. S. Govt.	1 6-cyl. 6½x 9
Lunetta	S. L. Slocum	Pr. 6-cyl. 6½x 9
Maraval	Mrs. G. T. Bliss	Pr. 4-cyl. 6½x 9
Minnemac II	A. J. Eddy	1 6-cyl. 8 x11
Missawit	D. Whitcomb	1 6-cyl. 6½x 9
Masquerador	Caleb Bragg	Pr. 6-cyl. 6½x 9
Navigator	Clarkson Cowl	Pr. 6-cyl. 6½x 9
On-Time-Again	H. W. Starrett	1 6-cyl. 6½x 9
Pastime	E. A. Shewan	Pr. 6-cyl. 8½x11
Porpoise	A. C. Thompson	1 6-cyl. 6½x 9
Presque Isle	Henry Laughlin	Pr. 6-cyl. 6½x 9
Rachel	Josiah Kirby	Pr. 4-cyl. 6½x 9
Reomar II	R. E. Olds	Pr. 6-cyl. 6½x 9
Roamer	A. Sack	Pr. 6-cyl. 6½x 9
Sachem	A. M. Andrews	Pr. 6-cyl. 6½x 9
Seminole	Henry Phipps	Pr. 6-cyl. 8 x11
Shirin	U. S. Navy	1 6-cyl. 9 x12¾
Sonsy	F. D. M. Strachan	1 4-cyl. 6½x 9
Sonnica	E. Shonnard	1 6-cyl. 8 x11
Speedwell	Theo. N. Vail	Pr. 6-cyl. 6½x 9
Speejacks	A. Y. Gowen	Pr. 6-cyl. 9½x14
Sybilla III	Jno. F. Betz, 3d	Pr. 6-cyl. 9 x14
Tramp II	H. M. Jewett	Pr. 6-cyl. 6½x 9
Trillora II	S. R. Guggenheim	Pr. 8-cyl. 6½x 9
Tuna	Jno. T. Pratt	Pr. 6-cyl. 6½x 9
Vagabondia	W. L. Mellon	Pr. 6-cyl. 9 x14
Valoria	Max Stotter	1 6-cyl. 6½x 9
Wildflower	W. A. Gilchrist	1 6-cyl. 6½x 9
Zumbrota	U. S. Navy	1 6-cyl. 6½x 9

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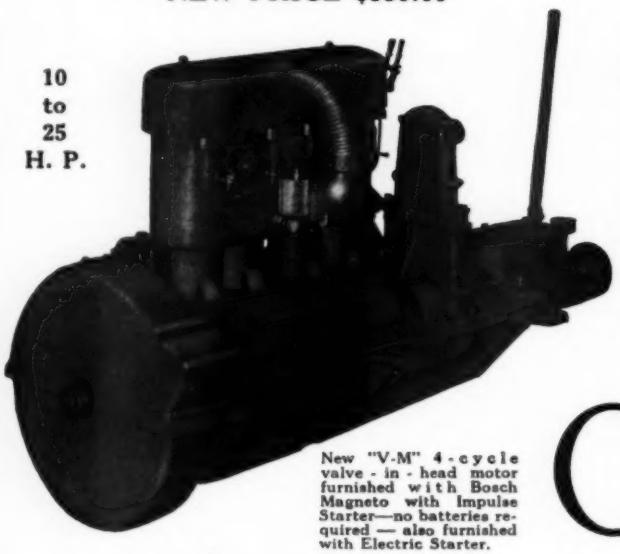

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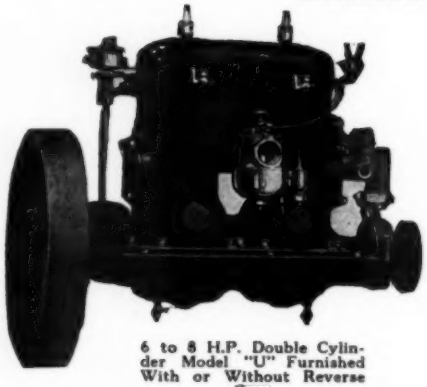

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Gray Two-Cycle Motors are built in models from 3 to 8 h. p. Gray Four-Cycle Motors are built in three sizes, 10 to 50 h. p. Write for FREE literature.

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Advertising Index will be found on page 110

No Wonder!

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Transmits More Power
Takes Hold Smoothly
Doesn't Wear Out
Never Gives Trouble
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McKinnon Reverse Gear

THERE'S a world of difference in the operation and service of a McKinnon Gear, compared with all other reverse gears. Because the McKinnon is built along entirely new lines—simpler, sturdier, stronger and more reliable in every way.

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Gears—Just three big sturdy bevel gears which are always in mesh. These gears have large strong teeth with wide contact faces. Accurate machining insures quiet operation. Breakage or wear in these gears is inconceivable. They give same speed ahead or astern.

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In addition to many successful boat installations during the past three seasons, the McKinnon Gear has been tested on the Sprague electric dynamometer by Prof. Vose of Case School of Applied Science, Cleveland. A copy of the report on this test is yours for the asking. Write for it.

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Absolutely guaranteed for one year

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MOTOR BOATING PRACTICAL HAND-BOOKS

Every motor boatman has long felt the need for a really complete and comprehensive library devoted to their favorite pastime—motor boating. One of the obstacles to the accomplishment of this important work was the difficulty in finding any one writer who could cover the field in its entirety. In presenting the new series of practical hand-books, MoToR BoatinG believes that the problem has been solved at last. These books are edited by Charles F. Chapman, M. E., the editor of MoToR BoatinG, and they are the results of months of untiring effort on his part, together with the best of thousands of suggestions sent to him by motor boatmen themselves. The list of the contents given below will give you some idea of the vast amount of ground covered by these volumes.

Practical Motor Boats and Their Equipment

Volume 1.—The first volume tells you what the ideal boat for various kinds of service should be and what to look for in buying a boat. Many suggestions about decoration and hints on all kinds of equipment. All about steering gears, wireless outfits, electrical attachments, etc. Glance over the list of contents appended herewith: Hulls, Ballast and Seaworthiness; Round Bottom *vs.* Sharp Bilge; What are the Advantages of Flare? Raised Deck *vs.* Trunk Cabin; Best Proportion of Beam to Length; Selecting a New Design; The Advantage of Bilge Keels; Open or Solid Deadwood? What Makes a Hull Seaworthy? The $1,000 Cruiser; Buying a Second-Hand Boat; Types of Bows and Sterns; Exterior Arrangement of Cruisers; The Best Cabin Arrangement; Finishing Up the Cabin; Changes in Interior Arrangement; Interior Arrangement for Open Boat; Propellor-Rudder Arrangements; Best Position for the Rudder; Advantages of the Outboard Rudder; Different Steering Positions; Steering Equipments for Motor Boats; Steering Gear for the Cruiser; The Steering Gear for a Runabout; Steering the Boat from the Side; The Electrical Equipment; Making and Wiring a Switchboard; Electric Lighting on a Motor Boat; The Inexpensive Lighting Outfit; Wiring the Small Cruiser; The Storage Battery; The Dynamo Cut-Out; Wireless for a Small Cruiser; Tender for a Thirty-foot Cruiser; Building a Folding Dinghy; Installing the Boat Boom; What is the Best Galley Arrangement; Ventilating the Galley; The Galley Stove and Its Installation; Making a Fireless Cooker; A Portable Cook Box; Running Water for the Cruiser; How to Build a Portable Table; A Table for the Open Boat.

Practical Motor Boat Building

Volume 2.—As its title implies, this volume takes up the building of your own boat. It also covers the construction of the necessary fittings such as awning, windshield, etc. Every boatman sometime or other builds a boat, and a book of this kind will save much time and prevent many mistakes. List of contents: Types of Motor Boat Fastenings; Boat Building Woods; Laying Down a Boat's Lines; Converting a Trunk-Cabin Cruiser; A Steam Box for Amateur Builders; Joiner Between Stem and Keel; Fastening the Frames and Floors; Boring the Forgotten Limbers; Fitting the Garboard Plank; Boring the Shaftlog; Fitting the Stuffing Box; The Stern Bearings for a Cruiser; A Water-Tight Companionway; How to Canvas a Deck; Hinged Water-Tight Hatches; Making a Water-Tight Hatch; The Coaming of an Open Boat; Fitting a Swinging Port Light; Making a Self-Bailing Cockpit; A Water-Tight Window Sash; Making a Water-Tight Skylight; How to Build an Engine Housing; How to Make an Engine Cover; Building a Tool Locker; Constructing an Extension Transom; How to Make a Pipe Berth; An Ice Box for a Cruiser; Installing a Toilet; How to Rig a Signal Mast; How to Make a Spray Hood; Fitting a Folding Windshield; An Awning for the Open Boat; A Cover for the Open Cockpit; Screens for the Side Light; A Support for the After Light; A Seat for the Man at the Wheel; Removable Davits for the Cruiser; The Boarding Steps; A Bow Rudder for Your Hydro; The Motor-Driven Club Tender.

Practical Things Motor Boatmen Should Know

Volume 3.—Navigation is one of the important subjects covered in volume three of the series. Tells you how to steer, how to increase the factor of safety, and a host of other things relative to the proper running of your boat. The chart and compass are both fully explained in a clear and comprehensive manner. The list of contents will tell you more about it: Advice for the Beginner, Lessons Learned from Experience; Good Things to Know; Increasing the Factor of Safety; Which Way Should the Boat Steer? Why a Boat Steers Badly; Why do Boats Squat? Figuring the Boat's Speed; Ballasting the Cruiser; Getting Off Bottom; To Ride Out a Storm in a Motor Boat; The Why and How of Storm Oil; Preventing Fire; Handling Ground Tackle; Government Charts; Stowing the Anchor on a Cruiser; Diminishing Deviation; Preventing Electrolysis; Stowing and Using Charts; How to Make a Chart Case; Keeping a Motor Boat's Log; How to Make a Sextant; Tides and Tidal Waters; Taking Her Through the Canals; The Best All Round Dinghy; Towing the Tender; Handling the Dory in a Seaway; Getting the Tender Aboard; Planning for a Cruise; Equipping for a Cruise; Equipment for Offshore Cruising; Novel Events for Regatta Day; Handicapping; The Object of a Handicap Rule; Laying Off a Race Course; Measuring the Length of a Race Course; Preparing a Boat's Bottom for a Race; How to Build a Turning Buoy; Starting Boats in a Race; Stowing the Signal Flags; Fitting a Gun Mount; A Fish Box for Your Cruiser; A Cabin Wall Rack.

Practical Marine Motors

Volume 4.—All about the marine motor; what it should and should not be. Tells why the automobile engine is unsucessful in marine work. The best location for your engine, the ideal engine bed, the fuel tank, exhaust and countless other suggestions that will enable you to get the best results from your power plant. List of contents: Purchasing a Marine Motor; How Many Cylinders? Power per Cylinder; High Speed *vs.* Heavy Duty; Long Stroke *vs.* Short Stroke; Correct Motor Design; Changes in One's Power Plant; The Things that Cause Vibration; The Automobile Engine for a Boat; The Best Position for the Motor; The Ideal Engine Compartment; Placing the Engine in the Hull; Installing a Motor in a Canoe; Installing Power in a Yawl; Converting a "Banker" to Power Engine Installation in a Hydroplane; Putting Power in the Rowboat; Limits of Shaft Inclination; Constructing the Engine Bed; Getting the Motor Aboard; Lining Up the Propeller Shaft; The Best Exhaust; Mufflers *vs.* Under-Water Exhausts; Installing an Under-Water Exhaust; Primary Batteries for Ignition; Keeping the Ignition System Dry; Installing a High-Tension Magneto; From Make and Break to Jump Spark; Installing the Gasoline Tanks; Taking care of Extra Gasoline; Spark and Throttle Controls; Constructing a Rear Starter; Propeller for Engine and Hull; Installing a Universal Joint; Gearing Motor to Propeller Shaft; The Automobile Throttle; Harnessing the Main Engine; Rebabbitting a Worn Bearing; Should Fuel Line be Inside or Outside?

Practical Motor Operation and Maintenance

Volume 5.—One of the most valuable books of the entire set. Your motor's ills and how to cure them. This volume tells you how to adjust your carburetor, how to fit piston rings, how to remedy poor compression and a number of other things that will enable you to doctor your own motor. List of contents: Locating the Motor's Troubles; The Overheated Motor; Starting in Cold Weather; Overhauling a Marine Motor; How to Save Fuel; The Fuel Situation; Using Low Grade Fuel; How to Run on Kerosene; Supplying the Fuel to the Carburetor; Adjusting the Carburetor; Cleaning the Fuel Tanks; Cleaning the Gasoline Line; Stopping Up the Leak in the Tank; A Home-Made Gasoline Gauge; Carrying an Extra Supply of Oil; Mixing the Fuel and Lubricant; Remedying Leaky Compression; Killing the Carbon Jinx; Tool and Spare Parts to Carry; Removing and Replacing Piston Rings; Repairing a Leaky Cylinder; Grinding a Motor's Valves; Setting the Valves; Timing the Ignition System; Cleaning the Water Jacket; Making and Fitting a Gasket; Patching Up a Bearing; Straightening the Sprung Shaft; Truing a Bent Propeller; Removing the Flywheel; Separating Couplings and Pipe Fittings; Changing the Shaft Hole Location; Utilizing the Exhaust; Disposing of the Bilge Water; Heating a Small Cruiser's Cabin; Operating the Outboard Motor; The Clean and Quiet Boat; Charging a Storage Battery; When the Motor Stops Unexpectedly; Making a Unit Power Plant.

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Volume 6.—This volume is an especially valuable one. You will find in it points covering the care of your boat that you never dreamed of before. Whether you are a beginner or a finished expert this book will give you a better knowledge of the handling of your craft than you can imagine. List of contents: Putting the Boat into Commission; Fitting Out a Thirty-Footer; Suggestions for the Beginner; Refinishing Bright Work; Keeping the Wood Surface Bright; Putting the Boat Out of Commission; Laying Up an Unsheltered Boat; Hauling Out for the Winter; Covering the Boat for the Winter; Launching from a Wharf; Correcting Faults; Lengthening Out the Boat; Moorings and Buoys; Taking Steps to Safeguard the Anchor; What to Use in the Bilge; Preserving the Wood in Boats; Emergency Rigs for the Cruiser; Auxiliary Sails for the Cruiser; Providing an Emergency Rudder; Preparing for Southern Waters; Stopping the Troublesome Leak; Replacing a Broken Plank; Removing Broken Lag Screws; Raising the Boat's Stern; Clearing the Propeller; Protecting the Bow and Stern; Open Boat Sleeping Quarters; Ventilating the Cabin of Small Cruisers; Converting the Open Boat to a Cruiser; Making a Cover for the Open Boat; Preventing Electrolysis; Building a Club Float; A Floating Boathouse; Constructing a Landing Stage; Building the Marine; Keeping the Thief Out; A Place for Your Shore Clothes; Stowing for Life Preservers; The Winter's Alterations; What Changes Shall I Make; The Satisfactory Bilge Pump; The Pressure Water System; Making a Pelorus; Your Storm Curtains; Life-Saving Equipment; The Absent Owner's Anchor Light; Mounting the Reverse Gear.

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MoToR Boating **119 West 40th Street, New York**

Advertising Index will be found on page 110

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"The Successful Light Weight Pistor" ©

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DELUXE light weight cast iron pistons will work a miracle in your motor boat. They weigh about half what ordinary stock factory cast iron pistons weigh because less metal is used and yet they are even stronger because of the scientific reinforcing ribs and ring across the head and down the sides.

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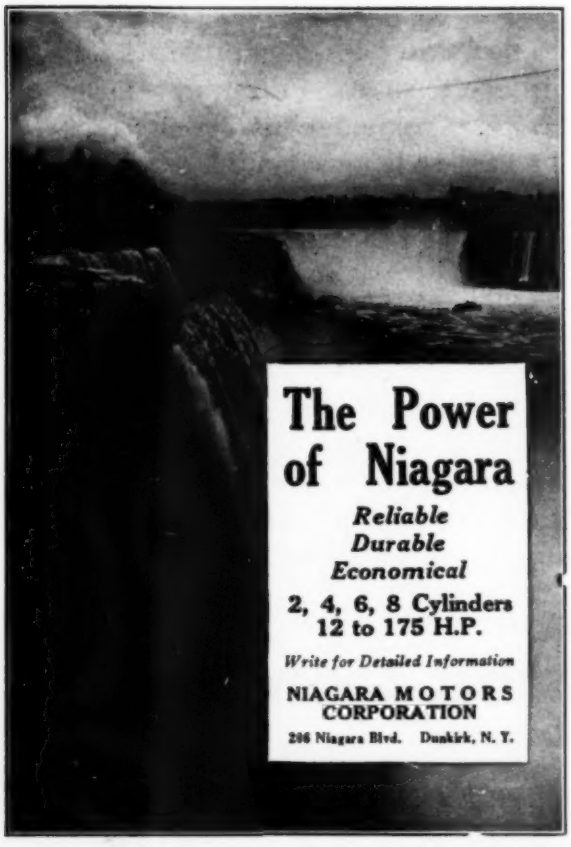

Successfully Passed Examinations

The following, whose papers were received during August, have passed:

Lesson No. 1

Ernest Burks, Fred H. Campbell, J. J. Conlin, Paul A. Isherwood, Chas. Vossbrinck, Chas. H. Winter.

Lesson No. 2

Fred H. Campbell, J. J. Conlin, A. C. DesBrisay, Chas. Vossbrinck.

Lesson No. 3

Fred. H. Campbell, J. J. Conlin, Louis DuBois, Elsie Fenton, Ralph Histand, Ed. H. Kershaw, Harry S. Lyon, Walter Monroe, Arthur Peay, Homer Pritchett, Chas. Vossbrinck.

Lesson No. 4

W. S. Betts, E. M. Conner, Fred H. Campbell, J. J Conlin, Andrew Eppler, J. Harrison, H. J. Hyde, C. Labunski, Harry S. Lyon, Art. Moulton, Chas. Mulvihill, P. F. McMahon, Frank O'Bierne, L. R. Philport, Dr. J. Schefcik, H. P. Shay.

Lesson No. 5

Ulysses Berger, James Bertram, Dr. F. G. Brown, Clarence Culver, Fred H. Campbell, J. J. Conlin, Russell Bart, W. W. Dickson, A. Dingman, J. Dunbaugh, A. J. Fenton, E. F. Folda, Vincent Frances, W. J. Gorton, Chas. E. Grush, Geo. F. Hacken, J. A. Haen, Edwin Halliday, Wm. A. Hart, Chas. Houlroyd, Carl Holzkamp, I. P. Horton, H. J. Hyde, A. E. Jones, John Kellner, Edwin Kennon, J. W. King, Geo. Law, Chas. Mulvihill, Dr. P. D. MacSween, Don. McLean, John McHenry, James McClay, T. W. Poland, Arthur Peay, Paul J. Polwick, Geo. A. Rawson, Wm. W. Robson, H. P. Shay, O. H. Sherbrook, Dorothy O. Smith, Barbara Smith, H. R. Stiles, P. R. Stephanson, S. H. Thomas, Geo. H. Thurston, Roy Wallace, L. E. Wilson, E. T. Youngfelt.

SUBJESTS COVERED IN PREVIOUS LESSONS OF CORRESPONDENCE COURSE

Copies of these lessons may be had by writing to the Editor

Lesson No. 1—*March*, 1921, *Issue*

Rules of the Road, Rights of Way, Proper Whistle Signals, Duty When Underway.

Lesson No. 2—*April Issue*

Types and Classes of Motor Boats and Other Power and Sailing Vessels, Lights for All Classes of Vessels.

Lesson No. 3—*May Issue*

Navigation and Government Lights, Lighthouses, Lightships, Range Lights and Their Characteristics and Classification, Aids to Navigation.

Lesson No. 4—*June Issue*

Buoys of Various Types. Colors and Numbers, Uses and Meaning. Can, Nun, Spar, Bell, Whistling, Lighted and Combination Buoys. Starboard and Porthand Buoys, Channel, Obstruction, Anchorage and Turning Buoys.

Lesson No. 5—*July Issue*

Equipment Required by Law for Various Types of Boats, International, Inland, Pilot and Motor Boat Rules and Regulations, Government Publications, the Light and Buoy Lists, Tide Tables, Coast Pilots, Notice to Mariners.

Lesson No. 6—*August Issue*

The Compass.

Lesson No. 7—*September Issue*

Variation, Deviation, Magnetic and True Courses, Compass Errors and Their Application, Various Methods of Determining Compass Errors, Leeway.

Lesson No. 8—*October Issue*

The Chart, Various Kinds of Charts, Where to Obtain Them, Their Use, Various Markings on Charts, etc.

Lesson No. 9—*November Issue*

Piloting and Chart Work, Laying Courses, Determining Position by Various Methods, Allowing for Tides and Current Danger Angles.

(*Continued on page* 102)

Rebuilt Marine Engines
IN CHICAGO

These engines are completely overhauled, rebuilt and refinished by our marine engine experts. Look like new, run like new, and are thoroughly guaranteed. Here's a chance to get a high-grade motor at a big saving.

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Agents for Sterling, Scripps, Friable, Kermath, Universal, Gray & Evinrude Motors.
New engines and repair parts always in stock.

Advertising Index will be found on page 110

Tarpon—Tuna—Sail Fish and Amber Jacks!

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Plans and Specifications on Request

CONSOLIDATED
SHIPBUILDING CORPORATION
MORRIS HEIGHTS, NEW YORK CITY

Such Things As Water Spouts

(*Continued from page* 13)

away enriched by a basketful of limes and mangoes which were given Paul by an American living at the head of navigation on the Indian River.

With our bill of health vised by the obliging and underworked customs inspector of Los Indios, and with a present of thirty gallons of muddy water, we set sail on July 8th for Kingston, Jamaica. Thanks to calms and an occasional head wind we were still able on the mornings of July 9th, 10th, and 11th to see the high peaks of the Isle of Pines. Three days of watch-standing, of taking what the frequent squalls had to give us, of rolling about for hours with mainsail furled and jib and jigger flapping, had netted us fifty miles of easing.

The log for these days is a monotonous record, with the words "Mended rip in mainsail" three times recurring. We were getting fed up on bayamos, and it is not surprising that on the morning of July 12th we decided to alter our itinerary and make our next stop Cienfuegos, which lies in the Gulf of Cazones, Cuba, more than four hundred miles short of Kingston. Besides, we sounded our water tanks and took stock of our larder and realized that we must make harbor within three days or subsist on reduced rations.

Looking back on it, the 12th of July was one of unusual interest, and it seems a fitting day on which to conclude this instalment of the cruise story. In the morning we were becalmed from seven until noon and during this period we had ample opportunity to mend a bad tear in the jib resulting from the previous evening's bayamo. We were favorably situated, too, to observe the formation of the largest bank of clouds that had yet worried us with its potential cussedness. But this monstrosity passed to northward in mid-afternoon without giving us any trouble.

In the morning before taking my daily swim—a thing I had many times resolved not to do south of the latitude of Miami—I looked over the side and saw, swimming far below us, a meditative shark. He was on the port tack, headed west, and I said to myself, "Shucks, he can't make the grade to the surface while I'm diving in and out." So I took a shallow dive off the stern and in five seconds had hauled myself out on the bumpkin and was eyeing the depths beneath me.

The shark was there, and he had come up from the depths. Given another second and he could have sampled man flesh.

I called to Paul who came on deck with his Lüger automatic and a wad of paper with which to attract the shark to the surface. The shark rose, his dorsal cleaving the air, and Paul fired. It was a miss, and the shark turned nonchalantly on his tail and swam beneath the boat. Other attractions were cast over the side—cracker crumbs and an empty can which floated astern of us. The shark rose to the latter bait, and as it was my turn to fire I let him have Paul's ex-German medicine.

I am probably the poorest pistol shot in seven kingdoms, but I fired haphazard and hit the shark. He jumped part way out of water and then dived down, down in the clear sea until he seemed no larger than the six-inch fish that had been swimming with him. He himself was a six-footer, not large as sharks go, but fully capable of inflicting damage to an arm or leg. We thought at first that I had killed him, and we have always thought that sharks are cowards, but this one disproved both beliefs by returning fifteen minutes later to take up a vigilant sentry-go beneath our craft. There he stayed until the wind, rising, filled our sails, and we bore away to eastward.

In the late afternoon of that day when calm again overtook us we were twenty miles south of Rosario Cay and still a matter of a hundred miles from Cienfuegos. We were plentifully supplied with gasoline and were commencing to entertain the idea of burning thirty or forty dollars' worth of the precious fluid to make port. To that end I had intended going over our Palmer motor a little, cleaning carbon from the cylinders and wiping a timer which I had reason to believe was too copiously lubricated. But with the procrastination that obsesses one when there is little to do and all the time in the world in which to do it, I had written letters instead.

At about six o'clock, lying below, I heard one of the boys say "Bayamo!" The word sounds like a Spanish curse, and we mean it for that when, the cloud banks forming, we see a squall approaching. There was desultory conversation about the bayamo which, as both boys agreed, was the most ominous that had yet been sighted.

Then I heard Joe Chambers say, "See how the falling rain is twisting into a spiral, and how the sea seems to be rising up to meet it."

That sentence was the most electrifying that has ever shocked my ears, or galvanized my limbs to action. It didn't need Joe's subsequent exclamation—"My God! It's a water spout!" to send me to the topside to get our bearing from it.

Nor did I stay long on deck to watch the sinuous, twisting, spiral of this phenomenon bear down upon us. In approximately fourteen and an eighth seconds following the formation of the spout the companionway ladder had been cast aside, the tank valves turned on, the cylinders primed, and the motor started.

Joe Squibb took the tiller and headed south while Al and I dashed individually to the mizzen and jib (the mainsail being already doused) and made the record furls of the voyage. Then, with deck hatches closed and Hippocampus on her most seaworthy footing, we had time to watch the trumpet and speculate on the result if it should overtake us. All hands agreed that we would be a total casualty—and we have since heard of a Jamaican fishing schooner that was lost with all hands when a spout sent tons of water crashing through its deck.

The moments were admittedly unpleasant and they were made more tense by the motor, which presently began missing in one cylinder. I went below to correct the mixture and switch the current from one set of batteries to the other, but I saw by the indisputable evidence of sparks issuing from opened petcocks that the motor was caked with carbon. She had not been cleaned in five or six hundred miles of operation and she was taking this time to show us my neglect. Yet, although she missed now in both cylinders, she plugged along. Presently I learned from the boys on deck that we were altering the bearing of the spout.

This was now a mile or so to eastward of us, moving slowly to the northwest and carrying with it the only air that was stirring. Directly to northward of it was a dense black cloud which sent shaft after shaft of forked lightning into the sea. To southward of the spout and of us was the characteristically overbearing cloud form of the bayamo into which we were heading as the lesser of two evils. Darkness was overtaking us with tropical swiftness, but we hoped with fervent intensity that the twilight would hold until the spout had broken or passed beyond us.

Five minutes passed and it grew appreciably nearer. Another five and we again widened our bearing. Then, as the night set in, it seemed to merge with the thunder storm and lose its peculiarly sinister form. Whether it fell, melted, or vanished into thin air we have no way of knowing, but I am pleased to be able to record that we were not on hand at the moment of its dissolution.

After the tenseness of this escape the bayamo seemed like an old friend. Indeed, when we came within its zone of action we found that it was made up of bluster with but little rain and wind. But we looked to northward, saw the thunder cloud sending its bolts of lightning into the sea, remaining almost stationary over the spot where we had been, and perhaps hiding within it a still active water spout—and we thanked whatever gods there be that we have a motor in our craft.

In the last few months I have grown cumulatively fond of the sport of sailing, but I realize if never before that a marine motor is a charter member of the volunteer lifesaving corps of America.

Mechanical Refrigeration

The modern ideas of cleanliness and sanitation do not agree with the use of ice for refrigerating purposes. Many of the largest and newest yachts are being equipped with simple refrigerating plants which produce their own ice for table use and also maintain a freezing temperature for the preservation of perishable foodstuffs. The Clothel Refrigerating Company have long been specializing in these units and many modern yachts are equipped with their machines. The refrigerant used is inoffensive and even should an accident occur no dangerous chemical fumes will escape. Some equipments use chemicals which if released in quantities would be dangerous to human life.

Weatherproof Lamp

A storm-proof lantern which uses a special form of incandescent mantels and burning gasoline is being made by the Akron Gas Lamp Company, Akron, Ohio. This light, which is entirely portable produces a very brilliant light of about 400 candle power. For outdoor work, repairs to boats and general camp purposes this light cannot be excelled. The operating cost is negligible, being less than the old style kerosene lantern. The light produced is fifty times greater. All metal parts are made of brass and cannot be injured even though the lantern might be accidentally dropped.

Rain, Spray,—Even Solid Water Cannot Short-Circuit

RAJAH SPARK PLUGS

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Waterproof
Shockproof
Breakproof
All Threads

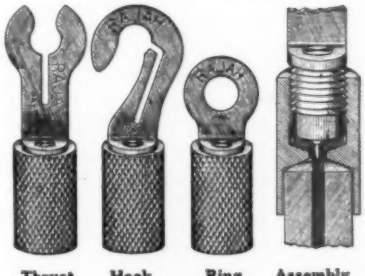
WHAT is more annoying than to have your engine spit and sputter, or perhaps go dead altogether, in a drenching rain or under a shower of spray while racing to port before a threatening storm? Don't wait for it to happen to you—put in a set of Waterproof Rajah Spark Plugs now. No other **plug** is so suitable for marine engines in open boats or for outboard motors.

Waterproof Rajah Plugs are standard factory equipment in the Elto Outboard Motor-Ole Evinrude's new two cylinder design which has become so wonderfully popular this year. These plugs are the last word of reliability for marine use. Moistureproof, troubleproof, indestructible—they make **ignition absolutely sure.**

Waterproof Rajah Plug $1.50; Giant Rajah Plug $1.25; Standard Rajah Plug $1.00

Elto Outboard Motors are factory equipped with Waterproof Rajah Plugs

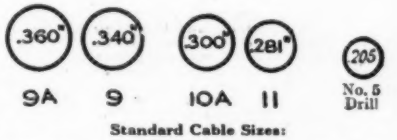
Rajah Solderless Terminals



Thrust Clip | Hook Clip | Ring Primary | Assembly to Cable

Simple to attach to the cable as well as to the plug. A perfect and permanent electrical connection completed in a jiffy without solder or tools. Just introduced. Rajah Solderless Terminals are selling everywhere at first sight. Try them.

To properly attach terminal cut back cable covering and bare wire about 3/16". Insert cable into ferrule with wire coming through small hole. Screw down pointed part, first centering wire in small hole. When properly assembled the strands of wire will spread evenly in bottom of ferrule and it will be impossible to pull terminal from cable.



Standard Cable Sizes:

5 M.M., 196 7 M.M., 275 9 M.M., 354

If your dealer does not have genuine Rajah Plugs and Terminals, send us his name, tell us the size you want, and we will see that you are supplied, postpaid. If you are not sure of the size, tell us the name of your engine.

Rajah terminals save time and trouble. Fit any plug

Thumb Nut — with all Rajah plugs unless Ball or Stud type preferred | Regular Fits any size cable | Thrust Furnished with ferrules to fit any size cable | Hook | Primary Ferrules to fit cables up to ½" | Keeps connections dry Protects against shocks Fits any plug or coil

Manufactured by Rajah Auto-Supply Co., Bloomfield, N. J., U. S. A.

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Every article is fully illustrated with working drawings and no information or instructions are missing which would be of assistance to the novice to build his own boat.

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Plans Prepared Expressly for MoToR BoatinG

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The plans contain outboard profile, lines, inboard, construction and interior arrangement plans, sectional views and complete table of offsets. Accompanying each design is a description of the boat and a full set of specifications taking up step by step each feature of the boat's construction, how it should be built and the proper material to use.

Plans and specifications of the following boats are included: Edith, a 18-foot runabout; Jane, an 18-foot runabout; Katharine, a 30-foot cruiser; Dorothy, a 25-foot runabout; Zenith, a 25-foot cruiser; Cyclone, a 36-foot auxiliary; Eclipse, a 40-foot express cruiser; Magnet, a 28-foot cruiser; Tornado, a 48-foot auxiliary schooner; Broncho, a 29-foot cruising runabout; Shark, a 21-foot utility runabout; Claire, a 36-foot express cruiser.

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Contain name and location of all principal ports and harbors, distances, compass courses and sailing directions. Invaluable for use on small boats and motor yachts. The set now includes the following charts:

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No. 1—Western End of Long Island Sound.
No. 2—Eastern End of Long Island Sound.
No. 3—Block Island Sound.
No. 4—New York Harbor.
No. 5—Boston Harbor.
No. 6—Buzzards Bay.
No. 7—Block Island to Vineyard Sound, including Narragansett Bay.
No. 8—Delaware Bay.
No. 9—Chesapeake Bay, Part I, Upper Part.
No. 10—Coast of Maine, Portland to Rockland.
No. 11—Hudson River, Kingston to Albany.
No. 12—Chesapeake Bay, Part II, Central Part.

Series B

Series B Charts Nos. 13 to 24 are in the course of preparation, and will be forwarded as ready. Series B is as follows:

No. 13—Lake Erie—Eastern Part.
No. 14—Lake Erie—Western Part.
No. 15—Hudson River, New York to Kingston.
No. 16—Lake Champlain.
No. 17—Erie Barge Canal.
No. 18—Massachusetts Coast.
No. 19—New England—Newburyport to Portland.
No. 20—Cape Cod Bay.
No. 21—Maine, Monhegan to Eastport.
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Advertising Index will be found on page 110

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Single Cylinder, 2 H.P.
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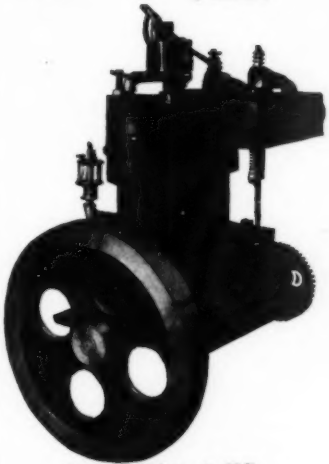
$42.50



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The Lowest Priced Four Cycle Motors Made

Kerosene or Gasoline Fuel

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For information, address
CHAMBER of COMMERCE, Fort Lauderdale, Florida

Going to Florida This Winter?

(*Continued from page* 14)

thirteen and a half miles long with three locks.

An easy day's run brings you to Annapolis which is a convenient stopover point. Supplies of all kinds are readily obtainable and in addition it is within easy electric car communication with Baltimore and Washington.

Fifty miles further down the river will be found Solomon's Island on the Patuxent River and another easy run of forty miles brings you to Redville on the Great Wicomico. Another good stopping point is a harbor behind North Point which is about fifty-five miles from Norfolk. Depending on weather and tidal conditions a ten-mile boat starting early in the morning can readily make the run to Solomon's Island in one day and continue on to Norfolk in another. The total distance from Chesapeake City to Norfolk is about 205 miles.

Numerous fish traps will be found along Chesapeake Bay and care must be exercised to keep well clear of these entanglements. If the weather is good and the tide fair the best policy is to stay in the ship channel and keep clear of all these obstructions. On reaching Norfolk supplies should be replenished as the next big city which will be reached on the way south is Charleston. Canned goods and other provisions can also be secured at Coanjock, Manteo, and Beaufort if necessary. Should a stop of several days be made at Norfolk, pass through the draw-bridge into a fine yacht basin called the Hague where most yachts stop.

Leaving Norfolk via the Elizabeth river we soon reach the Albemarle and Chesapeake Canal, a government waterway nine miles long with only one lock. There are no toll charges. Depending on whether Norfolk was left early in the morning or at noon stops can be made for the next night at the entrance to Currituck Sound or at the little village of Coanjock. The passage through Pamlico Sound should not be attempted in bad weather. Get an early start on a good day and make a through run to Beaufort. Should darkness overtake you before reaching there, there are several convenient harbors which can be selected from the charts.

The next stage of the run is perhaps the one which will offer the most difficulties to the small boat in particular. It is an ocean voyage of about 250 miles which can be reduced somewhat by going through Bogue Sound to Bogue Inlet. A reliable seaworthy boat with a full ten miles' speed can leave Beaufort and sail a straight course for the slue at Cape Fear which is about 100 miles distant and make a harbor for the night at Southport. Do not attempt to run through here at night. If any running at night is done at all it should be well off the coast where plenty of sea room exists. Slower boats leaving the entrance of Bogue Inlet early in the morning can readily make this run before dark and reach Southport in daylight. There are numerous inlets along the coast with which northern yachtsmen are not generally familiar. These are small gaps in the line of the beach through which the sea comes in with considerable violence at times. They are all similar in most respects and definite directions cannot be given as the channels change continuously without notice. In general great care is necessary in picking one's way through these inlets and they should not be attempted unless information concerning them has been obtained locally.

Most boats which are capable of making the through ocean voyage from Beaufort do not stop at Southport but continue on in one run to Charleston. Smaller craft put in at Winjah Bay and then make the balance of the run to Charleston via the inside route which is very tedious or outside on the ocean with the choice of two harbors, one at Cape Romain and the other Bulls Bay, in case bad weather develops during the run. At Charleston the anchorage is very poor and boats usually tie up at docks for which a wharfage charge is made. Supplies of all kinds and repairs of a more serious nature can all be made here as excellent facilities are afforded for all branches of work.

Leaving Charleston a return is made to the inside route which is plainly described in the Inside Route Pilot. A 50-mile run will break the distance between Charleston and Savannah provided one does not get hung up on some of the shoal spots in between. Another day's run will take the boat through St. Helena, Port Royal and Callibogue Sounds. A stop at Beaufort, S. C., may be omitted unless it is necessary to stop for supplies or otherwise. The day's run is finished at Thunderbolt, Georgia, where the Savannah Yacht Club may be made headquarters. Fuel can be secured here and local shops will provide for restocking the larder. From Thunderbolt an easy day's run will take one to Doboy Sound, Georgia, through St. Catherine's Sound. The inside route will further be followed to Mayport, Florida. This day's run will take one through Altamaila Sound, St. Simon Sound, at Brunswick, Georgia, St. Andrews Sound, Cumberland Sound, and Nassau Sound to the St. Johns River. Another short day's journey will bring one to St. Augustine, just back of the ocean and then a 60-mile run from here will take one to New Smyrna. The scenery becomes more interesting as one penetrates into the tropical country in Florida so that the sightseers will be kept occupied. The remainder of the voyage from here down will offer no great difficulties other than the many shoal spots encountered. A stop can be made at Cocoa-Rockledge. Another easy day's run will carry you further by 60 miles to Fort Pierce provided no unavoidable delays have been experienced at Grant Island and The Narrows. A good day's run to Palm Beach from Fort Pierce will pass Stuart, Jupiter Inlet, and Lake Worth Inlet. The final day's run to Miami can be made considerably easier by taking to the ocean at New River Inlet and going outside for the last 25 miles of this 64-mile run. The inside run offers among other things a canal toll of 10 cents per foot of length, tortuous channels, eel grass and mud. Having arrived at Miami all the hardships of the journey are quickly forgotten in the admiration of this wonderful country and the appreciation of its many beauties will linger for a long time.

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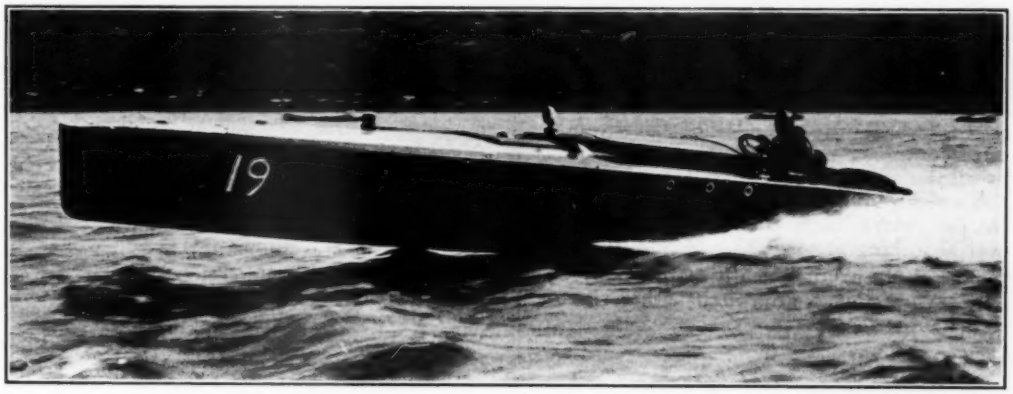
Hacker-Craft



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"NICK-NACK" broke all former records in the Wood-Fisher race at Detroit, for Marine Engined Displacement Boats. Breaking the ONE-LAP, 50-MILE, and 150-MILE RECORDS. AVERAGING 40.6 miles on the 150. BEATING ALL FORMER RECORDS by 2.3 MILES.

"NICK-NACK" is a 32′ x 6′ 4″ Legitimate Seven-passenger Runabout, and carried a SIX-CYL. 200-H.P. MARINE MOTOR, PROVING THE MOST EFFICIENT OUTFIT EVER PRODUCED.

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We have a few boats on hand for Florida delivery. Send for particulars.

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We can supply propellers with two or three blades, in practically any pitch, either right or left hand.

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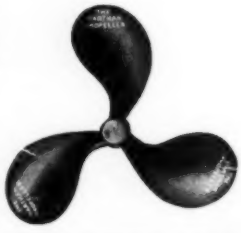

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What Navigating Instruments Shall I Carry Aboard?

(*Continued from page* 24)

stand and a controlling brake. Crank handles are provided for reeling in after the sounding has been made. A lead is attached to the outer end of the wire, above which is a cylindrical case containing the depth-registering device.

Several forms of depth-registering mechanisms are in use, one of which was devised by Lord Kelvin. In this, a slender glass tube is used, sealed at one end and open at the other. The inside of the tube is coated with a chemical substance which changes color upon contact with sea water. This tube is placed closed end up in the metal cylinder and as it sinks the water rises in the tube, the air being compressed by a force depending upon the depth of the water. The limit of discoloration is marked by a clear line and the corresponding depth is read off from a scale which goes with the sounding machine. With this pressure a slight correction is generally necessary to take account of the atmospheric pressure at the time the sounding is made.

The Patent Log (See Fig. 183)

The log is a device for determining the distance which a boat has run through the water. There are three principal kinds of logs known as the patent log, chip log, and the ground log. Of these the patent log is the only one used to any extent today.

The patent log consists of a registering device, tow line, and a rotator. The registering device is generally made fast to some permanent position near the stern of the boat, and the length of tow line used must be sufficient to extend beyond the effects of the boat's wake. The rotator is attached to the outer end of the log line, and is a small spindle with a number of wings or blades extending radially in such a manner as to form a spiral, and when drawn through the water in the direction of its axis rotates about that axis after the manner of a screw propeller. The registering device is so calibrated that instead of registering the number of total turns of the rotator and log line, it will register in nautical miles.

The patent log is by no means perfect, especially when used on small boats. It is subject more or less to error, sometimes as great as 10 per cent. The patent log naturally registers distance which the boat has run in the water, and does not indicate distance relative to some point on land. In other words, to get the net actual distance run, allowance must be made in the reading of the patent log for currents, leeway and such errors. The patent log cannot be depended upon for actual readings at low speeds—that is, speeds of less than five or six miles per hour. Wave motion also has considerable effect upon the operation of the patent log.

The Chip Log (See Fig. 184)

The chip log is not used to any great extent at the present time, as it has been superseded by the patent log. The chip log consists of three principal parts, known as the log-chip, log-line, and the log-glass. The log-chip is a thin piece of wood, weighted at one edge sufficiently to make it float upright in the water. As it is thrown overboard from the boat, it assumes a position at rest relative to the boat. In other words, the log-chip remains in a fixed position, and the boat sails away therefrom. A log-line is made fast to the log-chip in a suitable manner at one end, the other end of which is wound upon a reel kept aboard the boat. After the log-chip has been thrown overboard, the log-line will begin to unwind from the reel, which is generally mounted on a spindle to be held in one's hands. At a distance of 15 to 20 fathoms from the log-chip a permanent mark is placed to allow sufficient length for the log-chip to clear the wake of the boat. The rest of the line is divided into lengths of 47 feet 3 inches, called "knots," by pieces of fish line thrust through the strands. The number of strands of line or knots which leave the reel or pass over the taffrail of the boat in a given time, in the time which it takes the log-glass to empty itself, will be an indication of the speed of the boat. The log-line is so attached to the chip that when the entire length of the line has been withdrawn from the reel the sharp pull will cause one of the attachments in the log-chip to disconnect, and the log-chip will then float in a position of least resistance, and can be drawn aboard the boat without difficulty.

(*Continued on page* 94)

Advertising Index will be found on page 110

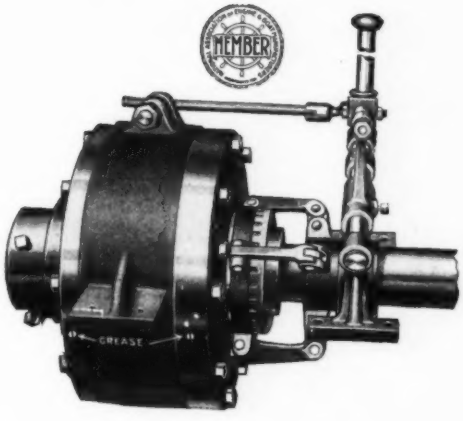
Relied on JOES GEARS To Win

WE refer you to such prominent winners in the motor boat racing game as Gar Wood, Com. Sheldon Clark, Walter Wilde, Ralph Sidway, Dustin Farnum and others.

Joes Gears handle the power of Misses America I and II, Miss Chicago, Meteor III, Arab IV, Misses Detroit I, II, III, IV and V, Miss Toronto, Gar Wood, Jr. I and II, Baby Gar which has just established a new world's record for displacement boats, and many other world-famous racing craft.

Write for catalog of our full line of Joes Reverse Gears, One-Way Clutches and Safety Rear Starters.

We specialize in Reverse Gears and One-Way Clutches for racing boats. Also carry a full line of light and heavy gears suitable for any craft.



JOES REVERSE GEAR

The Snow & Petrelli Mfg. Co.

156-B, Brewery St., New Haven, Conn.

Builders of High Grade Engines who extensively use JOES GEARS

Smith-Liberty 12 Cylinder
New London Ship & Engine Co.
Dodge "Burnoil" Engine Co.
Mid-West Engine Co.
Kahlenberg Bros. Co.
Clay Engine Co.
Venn Severin
Gulowsen-Grei Engine Co.
Mianus Motor Works
Buffalo Gasoline Motor Co.
Galth Motor Co.
Bridgeport Motor Co.
Camden Anchor-Rockland Machine Co.
Gray Motor Co.
Hubbard Motor Co.
Lockwood Ash Motor Co.
Mecco Engine Co.
Roberts Motor Mfg. Co.
Wright Machine Co.
Anderson Engine Co.
Dunn Motor Works
Evansville Gas Engine Co.
Fairbanks-Morse Co.
Frisbie Motor Co.
Hall-Scott Motor Car Co.
Missouri Engine Co.
Peerless Marine Motor Co.
Red Wing Motor Co.
Regal Gasoline Engine Co.
Gray & Prior Machine Co.

Agents Who Are Proud To Represent JOES GEARS

New York—Sutter Bros., 44 Third Ave., Service Station Foot of East 92nd St., Brooklyn
Philadelphia, Pa.—W. E. Gochenaur Mfg. Co., 631 Arch St.
Detroit, Mich.—Henry H. Smith & Co., 534 Jefferson Ave.
Chicago, Ill.—W. L. Masters & Co., 229 North State St.
New Orleans, La.—Arthur Duvic's Sons, 130 Chartres St.
Southern California—Fellows & Stewart, Inc., Wilmington
San Francisco, Calif.—A. G. Hegben, 440 Market St.
Seattle, Wash.—Pacific Marine Engine Co.
Toronto, Canada—A. R. Williams Machinery Co.
Montreal, Canada—The Pyke Motor & Yacht Co.
Newfoundland—John Barron & Co., 241 Water St., St. Johns
England—J. King & Co., 10 Church Row, Limehouse, E. London
Norway—Arendahl Motor & Machine Co., Arendahl
Turkey—Societe Generale d'Automobiles, Constantinople.

What Navigating Instruments Shall I Carry Aboard

(*Continued from page 92*)

The Ground Log

The ground log follows in a general way the principles which govern the chip log; except that a lead which sinks to the bottom is used in place of a chip, which floats in a fixed position. The ground log indicates speed relative to the land, and no corrections for current, etc., are necessary.

The Chronometer

The chronometer, the timepiece used on ships, differs from the clock or other timekeeping instruments in that it is constructed to perform its work with greater precision. Correct time, or regularity of a timepiece on shipboard is absolutely essential.

Chronometers should be handled with the greatest care and should not be subject to jarring, sudden shock or extreme changes in temperature.

As it is beyond the power of human skill to make anything absolutely perfect, it follows that all chronometers have more or less error. After this error has been reduced to a minimum there is no further effort made to adjust the chronometer. However, it is essential that the amount which the chronometer varies each day should be known, and the variation should be constant or nearly so. This error is known as the *rate* of the chronometer and the amount which the chronometer gains or loses each day is called the *daily rate*.

To insure a uniform rate the chronometer should be wound at the same time each day, although it may be capable of running a much longer period than twenty-four hours.

When using the chronometer for the purpose of observations, etc., a correction must be made to its reading for the chronometer's rate. For example, if the chronometer were known to be absolutely correct on June 1, and to have a daily rate of + ⅛ second, then when taking an observation on September 1, 11¼ seconds would have to be subtracted from the chronometer time to obtain the correct time.

Difference Between Clock Time and Sun Time

Did you ever realize that the time as shown by our watches and clocks in every day life is not correct? Very few times a year, and then only at certain locations on the earth, are they correct. They are all fast or slow, depending upon several things.

Of course, time is nothing more or less than our crude way of expressing the position of the sun at any particular moment, as it is the sun which is the master key to our lives, as well as to everything inanimate. At ten in the morning the sun has a certain position in the sky, at eleven o'clock it has another position, at four still another, and so on. But at eleven o'clock yesterday the sun did not have the same position that it had at eleven today, nor was the sun overhead (noon) yesterday exactly twenty-four hours before it was overhead today. In other words, there is a small variation in the time it takes the sun to go around the earth every day—that is, it is slightly more or slightly less than twenty-four hours from noon to noon, depending upon the time of the year. This variation from twenty-four hours is called the equation of time, and may amount to as much as sixteen and one-half minutes.

There is another error in the time shown by our watches which is much greater than the error of the equation of time. Everyone knows that noon is the time at which the sun is supposed to be directly overhead or to bear true south (in northern latitudes). As explained above, it does not bear exactly true south every twenty-four hours. Furthermore, if the sun is overhead (bearing true south) at New York when the clock is indicating noon, it is not overhead at Boston, Syracuse, Buffalo, or any other place which is not in the same longitude as New York. At Boston, when it is noon at New York, the sun is bearing west of south, while at Syracuse and Buffalo it is bearing east of south. In other words, it is past noon at Boston, and before noon at Buffalo. But it would not be convenient for the clocks at Boston to be showing 12:12, and those in Buffalo 11:40, while those in New York were at 12 noon. Great inconvenience in the routine of our daily lives would result from such an arrangement.

As the earth revolves around its axis every twenty-four hours (or nearly so) and as any circle drawn around the earth is divided into 360 degrees, it is apparent that one hour of time will be equivalent to 15 degrees on the circle drawn around the earth. As east and west distance on such a circle is known as longitude, an hour's time will represent 15 degrees of longitude, and four minutes of time, one degree.

As there is a difference of longitude of over 50 degrees between the Atlantic and Pacific Coasts of the United States, it follows that there will be a difference of time of something over 200 minutes as indicated by the sun. Such a difference is too great to neglect. That is, it would not be feasible to have the clocks in New York and San Francisco indicate the same hour. If such were the case, then when the clock indicated twelve o'clock noon at San Francisco, the sun would be low down on the horizon and it would have been daylight for only a few hours. It is not practical to have the clock time and real time as indicated by the position of the sun differ by more than one hour.

As mentioned above, one hour's difference in sun time represents 15 degrees' difference in longitude. The standard meridians of longitude which have been chosen in this country are the 75th, 90th, 105th, and 120th. Places having these longitudes have clock times which agree with the sun time, except for the slight error caused by the equation of time. Places located to the east of these meridians have clock times which are slower than sun time, and the clocks in localities to the west of the standard meridians are fast.

For example, New York City is located in longitude 74 degrees west, which is one degree to the east of the standard time (75th) meridian for eastern time. Therefore, neglecting the error of the equation of time, New York clocks are four minutes slow; Boston, longitude 71 degrees west, has its clocks sixteen minutes slow. In Buffalo, longitude 79 degrees west, the clocks are sixteen minutes fast.

The Course Protractor (See Figs. 185 and 186)

The course protractor has generally superseded the ancient parallel rulers for the purpose of transferring the direction of the line drawn on the chart to the compass rose on the chart, in order to determine its direction. In using the course protractor, its center should be placed on the chart exactly over the boat's position. The arm of the protractor is then swung around to the nearest compass rose on the chart, making the hair line down the center of the arm pass directly over the center of the compass rose. Holding the protractor arm firmly in this position, the compass part of the protractor is then swung around until the hair line cuts the same compass point or degree on the protractor compass as it cuts upon the compass rose. The compass and the rose are now parallel, or, in other words, they have the same variations. Holding the protractor compass firmly against the chart, the protractor arm is moved until its center line cuts the point on the chart where it is desired to lay a course. The compass course either in points or degrees can then be read off directly.

Should the boat's compass have any deviation, the course can be easily corrected to take account of this error by simply turning the protractor compass around, while holding the arm against the chart—clockwise if the error is easterly, and counterclockwise if the error is westerly.

Taking a Bearing (See Figs. 187, 188 and 189)

In order to take observations and bearings of distant objects with any degree of accuracy, it will be necessary to have some form of bearing finder or pelorus. The pelorus as it is manufactured and sold today by the dealers in nautical instruments is so very expensive that for the little use which the motor boatman has for such an instrument it would hardly pay him to go to the expense of purchasing one. However, with a little care, a home-made bearing finder may be constructed which under ordinary conditions will be found to give fairly accurate results.

Fig. 187 illustrates such a bearing finder. A circular piece of hard wood is cut out for the base of the instrument, and four series of tacks are placed 90 degrees apart, as shown. These tacks have the same function as the lubberline on the compass bowl. On the wood base a compass card is mounted; this may be one of those distributed for advertising purposes, or homemade, as the owner prefers. The compass card is mounted at its center to the base, so that it may be freely revolved around its center. Mounted at the same center will be seen a horizontal arm which rests directly on the compass card. This horizontal arm is provided at each end with vertical members, which are about six inches in height, and have small holes near their upper extremity, through which the distant object is sighted.

To use this bearing finder it is simply necessary to mount it in some suitable position on the boat, so that one set of tacks will represent the bow of the boat exactly as the lubberline on the compass does. The compass card of the bearing finder is then turned by hand, so that these tacks will be opposite that point on the compass card which represents the correct heading of the boat at the particular moment the bearing is to be taken. Keeping the pelorus base and its compass card in this position, the movable sighting vanes of the instrument are then turned so that it is possible to obtain a bearing of the desired distant object by sighting through the two holes in the uprights. The bearing of the object will then be indicated on the compass card below through an opening in the horizontal member of the sighting vanes. If possible, sights or bearings on a number of distant objects should be taken, and the bearings plotted on one's chart as a check.

From trolling speed to 20 miles per!

WHY not have a boat that can glide along at trolling speed if *that's* what you want, yet can pick up speed to get you home quickly, when *that's* what you want?

The four-cylinder UNIVERSAL means more than just more power. It means smooth power, as steady, quiet and certain as the finest type of automobile engine.

Equip your boat with a UNIVERSAL—and you enter a new era of motorboat ownership. You've come into your "own"—a full-fledged motorboater with an engine that takes its hat off to none. You've *ARRIVED*.

It makes no difference what size or type of boat you figure on—the UNIVERSAL is adapted to 80% of them all—auto boats, speed boats, launches, fishing boats, work boats—from 14 to 30 feet in length. It takes the little fellows at 18 miles an hour or better and proportionate speed for other boats, according to size and type.

The UNIVERSAL is completely manufactured in the Universal factories by marine engineers of 22 years' experience. It has established a world-wide reputation for dependable power. It has become recognized as the *standard* 9-12 h.p. four cylinder marine engine. It is equipped with reverse gear or Electric self-starter, where desired.

Ask any UNIVERSAL owner what he thinks and see what he says. If he doesn't convert you to a UNIVERSAL enthusiast in a hurry, it won't be because he won't *try*. Thousands of UNIVERSAL fans are ready to tell you why they bought the UNIVERSAL and why they think you should. Get a UNIVERSAL this season and start a new deal in your motorboating. Find out the facts now—send for catalog today.

Universal

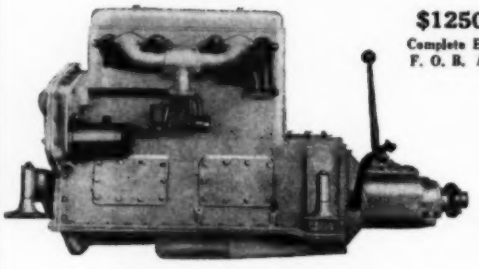
4-Cyl.
9-12 h.p.
MARINE ENGINE

UNIVERSAL MOTOR CO. Oshkosh, Wis.

Not connected with any other firm using the name "Universal"

Manufacturers of the Universal 4 k.w. and 2 k.w. four cylinder Electric Plants for lighting boats, summer camps and homes, farms, etc. Send for catalog.

J. V. B.

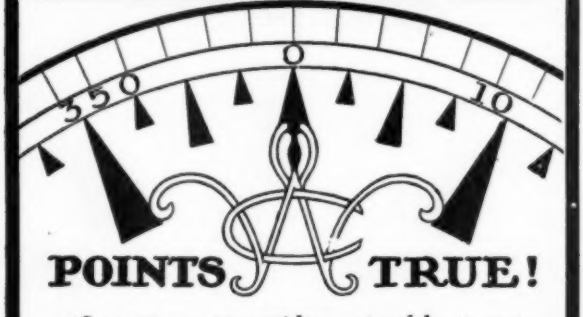


$1250.00
Complete Equipment
F. O. B. Akron O.

Chas. D. Mower, well known naval architect, of New York City, speaking of his J. V. B. installation in the schooner yacht "MISSOE" owned by W. C. Carnegie of Rector, Pa., says, "I am absolutely converted to your reverse gear and clutch as it is the best I have ever used for handling a boat in close quarters around docks. It is surprising how smoothly the engine runs when loaded down and also how well she picks up the load without the slightest suggestion of stalling even with the throttle nearly closed."

Write for details

THE J. V. B. ENGINE COMPANY
Jos. Van Blerck, President
196 Kenmore Boulevard, Akron, Ohio, U. S. A.
Cable Address: Vanengine, Akron. W. U. Code.



POINTS TRUE!

As your compass guides you safely to port, so the mark *WC* guides you to Dependable Motor Boat Fittings. The

WC Oil Compass

is constructed on scientific principles by skillful workmen. Its action, accuracy and steadiness are guaranteed under all conditions. Built to withstand the jars of power craft, the dial is adjusted to remain steady in a sea way and responds quickly to a change in direction. Every Compass carefully tested before shipping. 2, 2½, 3, 4 and 5 inch dials. At your dealer's or write us.

Send 20c in stamps for celluloid Course Protractor. "Compass Talks and Tests" sent free. Tells how to box the compass, contains deviation tables, and other practical information for compass users.

WILCOX, CRITTENDEN & CO., Inc.
4 South Main Street Middletown, Conn.

Yard and Shop

(*Continued from page* 40)

measuring devices and similar equipment. With the American Bosch organization he will be closely identified with the intensive and substantial sales and engineering program of the new organization in connection with the lighting, starting and ignition equipment now included among its products.

Nick-Nack, a Fast Runabout

In order to compete in the Fisher-Allison race at Buffalo, Comm. Humphrey Birge of the Buffalo Launch Club commissioned John L. Hacker of Detroit to build for him a fast runabout to be eligible for this race. Through various delays it was not completed in time to be ready for the races at Buffalo and it first competed in the Wood-Fisher race at Detroit. The six-cylinder 200 h.p. Hall-Scott motor with which it is equipped drove it remarkably well throughout the races, many records having been broken in the course of the several events. A two and one-half mile lap of the course was done at the rate of 42.15 m.p.h. Fifty miles were run in 1:12:31 or an average of 41.3 m.p.h. This speed was better than was made by more powerful boats equipped with twin screws. Mr. Hacker has turned out a wonderful boat which is capable of remarkable speeds for the relatively small power installed. Wherever the boat has been in competition it has established new records for various distances and is today one of the most promising of the fast runabout types. In the race with Baby Gar, a 32-footer with a 450 h.p. marine six, Nick-Nack only was about two miles per hour slower over a total course of 150 miles.

Wm. H. Hand, Jr., to Use Hall-Scotts

Wm. H. Hand, Jr., well known Designer and builder of modern V bottom craft, has recently taken over the boat shops and yards of the late Frank C. Smith of Fairhaven, Mass.

Among the boats now under construction in this plant, is a 25 footer of 5 foot 4 inch beam, one of Mr. Hand's own standard designs, which he is building for his own personal use. For this boat, Mr. Hand has selected a four cylinder 125 H.P. Hall-Scott marine engine, which on account of its extremely moderate weight in proportion to the power delivered, makes an absolutely ideal power plant to enable the obtaining of maximum speed without loading down the boat with too much engine weight and the consequent sacrifice in sea going qualities and general efficiency.

Low Grade Fuel Engine

The ever-increasing cost of gasoline and other similar fuels is being overcome to a large extent by the introduction of heavy oil engines which use any of the low-grade fuels at a tremendous saving in outlay. Small units have not been easily obtained heretofore, but the Cummins Engine Company of Columbus, Indiana, is now producing a single-cylinder unit of 7 h.p. and a two-cylinder unit of 14 h.p., both of which have a bore and stroke of 5 x 7½ inches. The operating cycle permits of very simple construction and such devices as carburetors, magnetos, batteries, coils, wires and spark plugs are entirely done away with. The ignition occurs entirely due to the heat of compression generated within the combustion chamber of the motor in its operation. These engines can be started from cold without priming. And by reason of the perfect combustion of the fuel carbon troubles are entirely eliminated. The economy and reliability of the large-sized Diesel motors is duplicated in these smaller machines and they are particularly suitable for small work boats, cruisers and motor vessels of any type.

To Continue Reliance Tachometers

Users of high grade speed indicating and recording instruments may be interested to know that the Blanchard Instrument Company was recently formed to continue the manufacture of the well known Reliance Tachometer, an instrument for indicating the r.p.m. of high speed machines, etc., also recording the total number of revolutions. The concern is a Massachusetts Corporation with principal offices at 7 Deacon Street, Cambridge, Lester C. Gustin, President; William P. Shine, Treasurer; and Leon E. Blanchard, Vice-President. Besides the Reliance instruments, for the production of which it has exclusive control, the concern makes speedometers and counting machines for various purposes.

This Company has equipped an up to date factory with precision machinery and tools for the production of fine instrument work and the services of their engineering department is at all times available for assisting manufacturers in their speed indicating, recording and operation counting problems.

(*Continued on page* 102)

Advertising Index will be found on page 110

50 Ft. of Cruising Comfort in a 36 Ft. Boat

THE structural perfection of the Burger 36 Ft. Cruiser accounts, in a measure, for its marked seaworthiness and cruisability. But more than this—it represents the results of skillful and authoritative designing ability which is so pleasingly revealed in comforts and conveniences identified only with larger and more expensive boats.

And yet with its cozy interior and roomy cabins, the charming symmetry of the hull and balanced arrangement of the deck cannot fail to create well-deserved admiration and an enthusiastic desire for ownership.

A bridge deck large enough for all; fore and aft cabins for lounging or sleeping quarters or dining-room; a well-equipped galley; an engine room with two bunks and workbench; two toilets; every detail correct—do you wonder now why Burger owners are proud of their 50 ft. cruisers only 36 ft. long?

BURGER BOAT COMPANY, MANITOWOC, WIS.

Write for our illustrated book containing photographs and specifications.

The Burger Boat may be inspected in New York waters on appointment. Write us and we will be glad to arrange matters.

Bridge Deck, Engine Room and Galley

BURGER

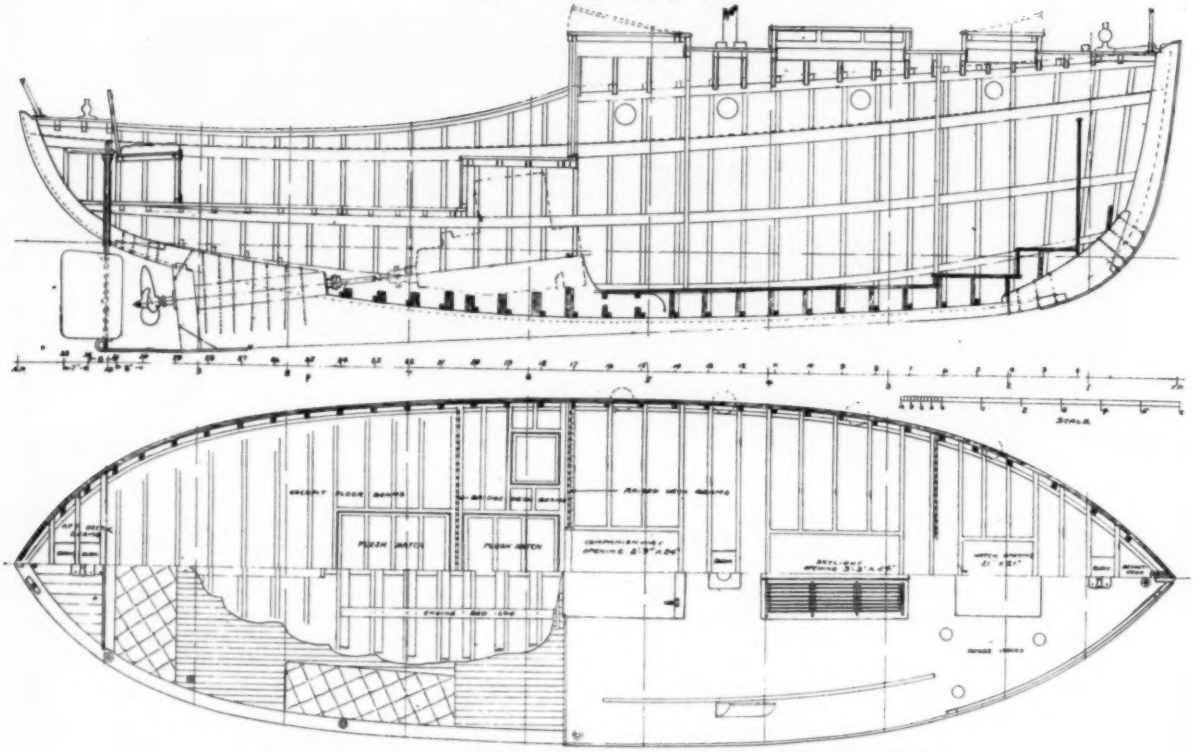
BOATS BEAUTIFUL

Immediate deliveries from stock. Price without war tax, $4950.00 delivered at Manitowoc, Wis.

We also build a 26 ft. Runabout, designed by John L. Hacker. Speed 25 miles. Complete details on request.

Tarpon, an Easily Built Cruiser

(*Continued from page* 38)



Construction profile, deck beam plan and deck arrangement plan for Tarpon

planed and sanded before painting.

Ceiling: To be ⅜-inch tongued, grooved and V-d cypress. Fastened with wire brads.

Sheer Rib-band: To be white oak 2½-inch half-round secured by long brass screws, heads countersunk and plugged.

Raised Deck Clamp: To be spruce or yellow pine 1¼ by 3 inches fastened to frames alternately by galvanized wire nail riveted over ring and galvanized boat nail. To be in one piece each side.

Main Sheer Clamp: To be spruce or yellow pine 1¼ by 4½ inches fastened same as Raised Deck Clamp.

Bilge Clamps: Two each side, each in one piece. Same size and fastenings as Raised Deck Clamp.

Cabin Floor: To be ⅞-inch pine nailed to beams or floor timbers, as case may be. Center boards for width of one foot to be left loose for access to bilges. Beams to be 1¼ by 1¼ inches oak.

Cockpit Floor: To be ⅞-inch white pine nailed to 1¼ by 2 inch oak beams. Flush hatches same construction as floor. Each hatch fitted with brass flush ring 1½ by 1¾ inches. Hatch framing to be slightly beveled to fit against cockpit floor framing so as to take weight so it does not come entirely on hatch. Hatches bound with brass 1 1/16 by 1/16 inches. Hatches to be fitted with bolts for locking from under side.

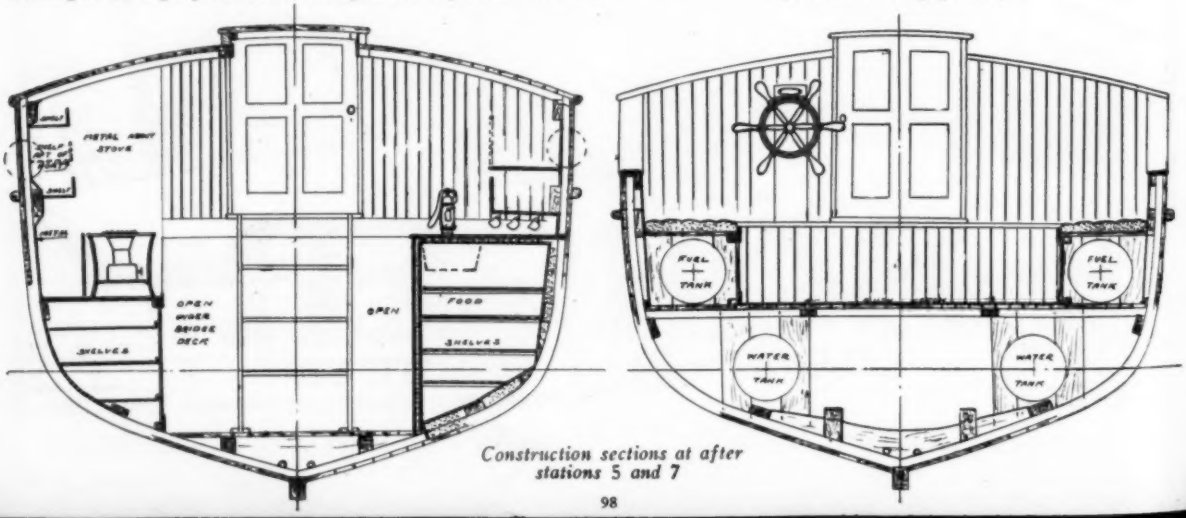
Bridge Deck: Beams and corner posts to be oak 1¼ by 2 inches. Aft end to be ⅞-inch oak tongued, grooved and V-d. Deck to be ⅞-inch white pine with seams caulked and puttied or filled with black marine glue.

Scuppers: Lead pipe 1-inch diameter to be fitted in aft corners of cockpit, ends flanged over outside of planking and over top of cockpit floor and covered with brass ring.

Cockpit Seats: Three seats as indicated to be built as follows: framing of 1¼ by 1¼ inches oak, top ⅞-inch pine, spruce, with removable sections or traps with finger-hole in top, front to be ⅜-inch tongued, grooved and V-d staving with ⅜ by 3-inch oak finishing strips top and bottom. Backboard ⅞-inch oak. Cushion to be 2½-inch thick, filled with kapoc, covered with material of owner's selection.

Cockpit Rail Cap: To be white oak 1-inch thick by 4¼ inches wide. Secured by screws, heads countersunk and plugged.

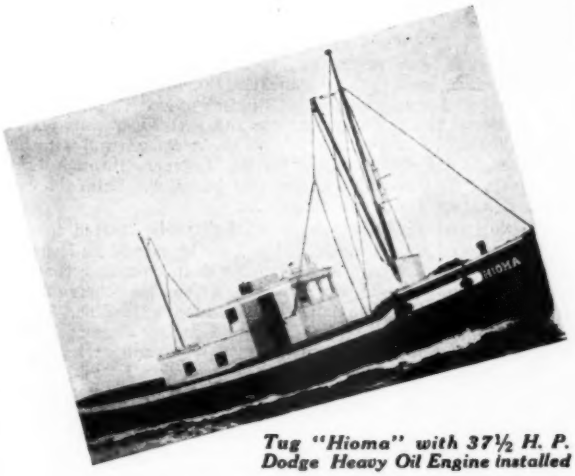
(*Continued on page* 100)



Construction sections at after stations 5 and 7

Fishing Boat "Bandeirante" propelled by 50 H. P. Dodge Heavy Oil Engine

Power Boat "Dora" with 25 H. P. Dodge Heavy Oil Engine installed in salmon trailing service



Tug "Hioma" with 37½ H. P. Dodge Heavy Oil Engine installed

The gauge of service

Theoretical establishment of success in a marine engine is of little interest to the modern marine man. Heavy Oil engines are so similar in general principle that only actual performance gives acceptable proof of the success of any heavy oil engine.

Dodge Heavy Oil Engines, Marine type, are daily proving in dozens of installations in many waters, that the Dodge application of heavy oil engine practice is thoroughly successful.

A five-size range eliminates over- or under-powering; unit cylinder construction retains the same simplicity in a six-cylinder engine that is found in a one. As a main power plant, or an auxiliary, or built into a generating unit, a Dodge Heavy Oil Engine may always be relied upon to give the exacting service that marine usage demands.

DODGE

Heavy Oil Engines
Marine Type

We will respond immediately to inquiries from accredited dealers desirous of handling Dodge Heavy Oil Engines in their localities.

Dodge Sales and Engineering Co.
Mishawaka, Indiana, U. S. A.

Tarpon, An Easily Built Cruiser

(*Continued from page 98*)

Raised Deck: Beams to be 1¼ by 2 inches white oak crowned and spaced as per plan, lower edges to be chamfered. Raised deck plank to be ¾-inch tongued, grooved and V-d pine, spruce, or cypress, nailed to beams, heads punched in under flush, puttied, deck planed smooth and given coat of thick white lead paint. Paint under side of 8-ounce canvas and while paint on canvas and deck is wet spread canvas over deck, stretch and tack around edges, turning edges of canvas down over planking and up on inner side of hatch and skylight coamings. At raised sheer edges to be covered by 1-inch oak half-round.

Breasthook at Bow and Stern: At each end of boat oak 1½-inch breasthook to be fastened by ⅜-inch diameter galvanized rod.

Companionway: Sill to be 1¼ by 2½ inches with rabbet as indicated. Door casing to be 1 by 2½-inch oak. Door to be oak ⅞-inch stiles and rails with ⅜-inch panels, hung on bronze fast pin butts and fitted with bronze ships lock set. Companionway cover to be 1⅛-inch oak with 1¼ by 1¼-inch oak framing on four sides, to be hinged with bronze T hinges and provided with hinged hasp.

Bulkheads: Cabin bulkhead to be ⅞-inch tongued, grooved and V-d oak or cypress. Interior bulkheads to be ½-inch tongued, grooved and V-d cypress or pine.

Transoms: Top to be ⅞-inch pine, framing 1¼ by 1¼-inch oak, front framing ⅞-inch with ¾-inch doors with ⅜-inch panels, each door fitted with bronze butts and cupboard catch. Back cushion to be lashed to galvanized 1-inch pipe frame fitted with sockets to allow frame hinging up to form berth. Sockets to allow frame to slide inboard distance sufficient to clear bulkheads when frame is hinged up. Chains and eye bolts to hold berth up to be provided.

Toilet Room: Doors to be same construction as companionway door. On aft side of doors bronze knobs to be fitted; on forward side T handle closet catch to be fitted. Brass cabin door hooks to be provided.

Refrigerator: To be built of two thicknesses of wood, ⅞-inch oak or cypress outside and ⅞-inch Balsa wood inside with 1½ inches air space between. Ice pan to be drained to bilge. Gratings set on cleats to be provided in food space. Door to be two thicknesses of Balsa wood inside with ⅞-inch oak outer thickness, hung with ice-box hinges and provided with ice-box latch.

Stove Space: To be insulated by sheet zinc over asbestos mill board about ¼-inch thick.

Lockers: To have ⅝-inch shelves with ledge on front edge. Doors to be ¾-inch with ⅜-inch panels, fitted with cupboard catch.

Dish Lockers: To be built of ⅝-inch pine. One dozen brass 1-inch cup hooks to be fitted.

Toilet Room Hatch: On raised deck hatch with hinged top cover to be fitted. To have 1⅛-inch oak coaming, cover of 1⅛-inch oak with 1¼ by 1¼-inch oak framing, to have 2 by 2-inch brass butts and bolt which can be fastened from under side of hatch.

Skylight: To have 1⅛-inch oak coaming, covers, and strongback. Covers to be glazed with wired glass set in rabbet and with oak quarter-round fitted at edges. To have brass 3-inch skylight hinges, ¼-inch diameter galvanized rods fitted into cleats on skylight covers to protect glass, drains, and tongue in top of coamings fitting into groove in covers.

Plumbing: In toilet room to be installed water closet with lead piping, brass strainer and sea cock on supply, sea cock on discharge, with lead sleeve through planking, all joints lead wiped, supply opening one foot farther forward than discharge outlet in planking. Oak finished water closet.

Folding lavatory to be installed on bulkhead with basin pump connected with fresh water tanks by ½-inch galvanized iron pipe, with drain cock fitted at lowest point of piping. Lavatory to discharge overboard, check valve being fitted to prevent water entering from outboard.

Fresh water tanks to be of 25 gallons capacity, each 12 by 48 inches, fitted in pine chocks secured to hull, each tank fitted with vent, 1½-inch filling pipe threaded into bushing on tank and into brass deck plate in cockpit floor, and with outlet fitted with shut-off cock. Piping from each tank to lead to Tee, from which line of piping will lead to galley pump and lavatory pump.

Enameled iron sink 12 by 16 inches to be installed in galley. Galley pump to be 2-inch size, fitted with faucet.

Fuel Tanks and Piping: Under seats in cockpit two 25-gallon 12 by 48-inch seamless steel fuel tanks to be installed in pine chocks securely fastened in place, each tank fitted with vent, 1½-inch filling pipe threaded into bushing on tank and into brass deck plate in seat top, and with outlet and gasoline cock, then Colador strainer. From strainer ¼-inch seamless annealed copper tubing to lead to Tee, thence to gasoline cock near carbureter. Feed piping to be made up with S. A. E. standard fittings, unions, etc., so that all fittings can be readily disconnected. Coil in piping to be made to take up vibration Tanks to be given coat of red lead in oil.

Steering Gear: At point shown oak board 2 by 5 inches to be bolted to aft end of bridge deck and on this board shall be mounted 20-inch galvanized chain and sprocket steering wheel and gear. Over gear 4-inch liquid compass to be mounted and the whole boxed in with ⅝-inch oak. Spark and throttle controls to be located on inboard side of boxing. Tiller rope 5/16-inch diameter to be connected with chain over sprockets and led through galvanized sheaves and fair-leaders to 12-inch galvanized quadrant tiller. Turnbuckle in line.

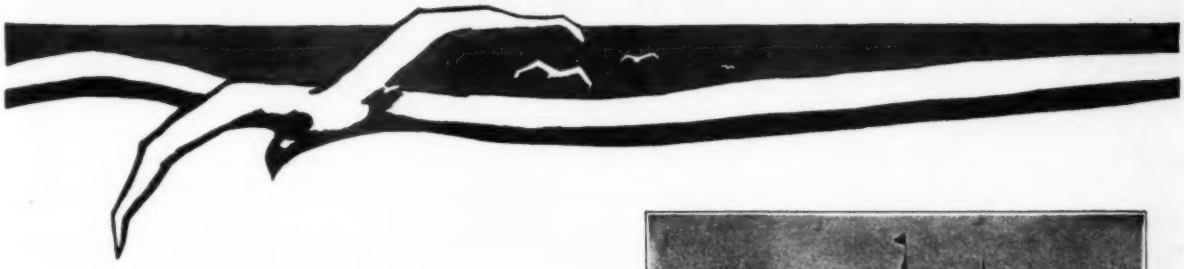
Rudder blade to be ¼-inch brass plate cut to shape. Rudder stock to be 1-inch diameter brass round slotted to take blade, which is to be riveted to same, squared at top for tiller and fitted at lower end through hole in skeg and secured by cotter pin. Skeg to be ⅜ by 42-inch brass. Rudder port to be brass pipe to fit stock threaded through horn timber and fitted with lock nuts outside and fitted at top with brass pipe cap bored to fit stock and packed with hard grease. Squared head of stock fitted with quadrant tiller with length above sufficient for slipping emergency tiller on.

Equipment and Fittings: Two 3½-inch galvanized bulwark chocks fitted in chock rail. Two 6-inch galvanized Skene stern chocks. Flagpole sockets bow and stern with flagpoles and halyards complete. Three size No. 11 galvanized bitts. One 2½-inch galvanized chain deck pipe. Two 5-inch brass port lights, hinged type with long collar. Six 6-inch brass port lights, hinged type with long collar. One dozen brass coat and hat hooks. One dozen brass 1-inch cup hooks. Portable dining table. One 8-foot galvanized tipped boat hook. One fire extinguisher. One fog horn. One fog bell. Two copies Pilot Rules. One whistle or electric horn. Six life preservers. Set of oil or electric running and anchor lights. Stove of owner's selection. Plans show space for two-burner stove. One 50-pound galvanized kedge anchor with oak pads and manila rope lashings for same. Necessary length of 2¼-inch circumference manila cable spliced to anchor and to eye bolt in rope locker. Should be sufficient to anchor in any waters in which you expect to cruise. Two 30-foot ¾-inch diameter manila docking lines.

Mast and Rigging: Mast to be 2¾-inch diameter at deck, properly tapered. Fitted with lignum-vitae truck. Yard to be 6 feet long by 1¾ inches diameter in middle, tapered at ends, secured by bolt. Forestay, side stays, and guys from mast to yard ends to be 3/16-inch galvanized iron rope spliced each end. Stays fitted with galvanized turnbuckles attached to eye plates. Braces of 6-thread manila rope from yard ends to deck, being lashed around forward awning stanchions or to cleats on deck.

Awning: Stanchions to be ½-inch diameter galvanized pipe in one length from rail to rail, bent at top at side with about 8-inch radius, each end of stanchion threaded into galvanized deck flange. Spruce slats ½ by 2 inches spaced 18 inches apart to be riveted to slats, running fore and aft. Over slats waterproof khaki, 12-ounce material, to be stretched and attached along edges by double brass awning fasteners through brass grommets. End and side curtains to be fitted. Celluloid windows in forward and aft curtains.

Painting and Finish: Interior of hull to be treated to coat of raw linseed oil. Exterior of hull to be planed and sanded and given coat of lead priming paint and at least four coats of best yacht white above painted water-line and two coats of best anti-fouling copper paint below the painted water-line. Sheer rib-band painted white. Raised deck and cockpit floor and cabin floor painted one coat of lead priming paint and at least two coats of gray or salmon paint. Aft deck finished bright. Bridge deck finished bright. All exterior natural finish filled and given at least three coats of best spar varnish. All interior natural finish to be oil rubbed. Awning frames and stanchions painted brown. Galvanized deck hardware coated with aluminum paint. Cockpit rail cap, cabin bulkhead at forward end of cockpit, hatch, skylight, companionway, backboard to aft seat, interior trim to be natural finish.



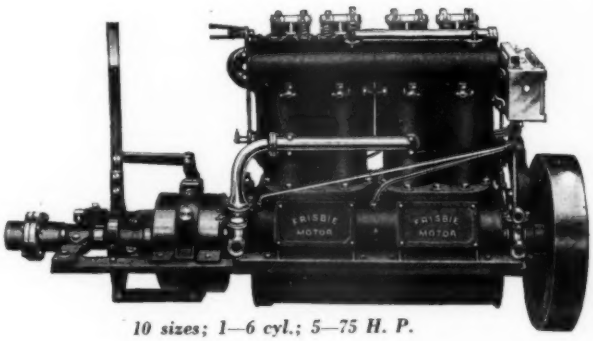
Frisbie
VALVE-IN-HEAD
MOTOR

Designed by Mower Powered by "Frisbie"

THIS is a photograph of the 27-foot auxiliary schooner "Rusugeo" designed by Chas. D. Mower of New York for Dr. G. B. Farnsworth of Cleveland, Ohio.

Although she is a big, heavy boat, the four cylinder 30 H.P. Frisbie Valve-in-Head Motor with which she is powered, drives her at better than seven miles an hour.

When a well designed, well built boat is equipped with an equally well designed, well built engine, the satisfaction of the owner is assured.



10 sizes; 1—6 cyl.; 5—75 H. P.

The beautiful Frisbie catalog is sent to any interested person without obligation. Ask for it.

Frisbie Motor Company

7 College St. Middletown, Conn.

Frisbie an' I

FLORIDA BECKONS

NOT until the sheer beauty and winsomeness of Florida had won him to the joy of living, did old Ponce de Leon begin his ardent quest for the mythical Fountain of Youth.

Could that hardy adventurer visit the Florida of the coming Winter season, he would quickly become convinced that he had missed his object only by centuries and not miles.

And distinctly helpful in making him firmer in that opinion would be a delightful cruise among those picturesque inland streams in a

MATHIS-BUILT HOUSEBOAT

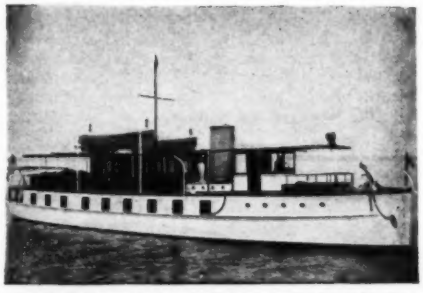
What an advance on the best ever offered before in houseboats? Never was such comfort afloat. No leaving home ease to go sea-faring—here is roving with home—at its best—right along.

Once knowing the joys of a Florida season on one of these houseboats, you would wonder how anyone would choose to spend his Florida Winter any other way.

MATHIS YACHT BUILDING COMPANY

Specialists in Cruisers and Houseboats from 40 to 120 feet

Cooper's Point **Camden, N. J.**



LUNETA Mathis Built Houseboat enjoyed by Col. S. L. H. Slocum, Washington, D. C.

Yard and Shop

(*Continued from page* 96)

New Catalog of Hacker Designs

John L. Hacker the well-known Naval Architect, designer as well as producer of a great many high-class Runabouts, light Cruisers, etc., wishes to announce that a new catalog is ready for distribution, to the readers of MoToR BoatinG, and that copy of same will be sent any one who will write for it.

In this catalog will be described a number of new designs in runabouts, day-boats, and cruisers. Of both the high speed type and medium speed. One in particular will be a design for Everybody's Cruiser, which is a 30-foot cruiser, having wonderful accommodations for a boat of that size, and which can be built for a very low cost. Also a number of runabouts from 15 to 40 foot, and larger boats up to 50 foot. All of these designs are based on boats already built, and that have performed in every way, and backed with 25 years of practical experience as a designer and builder. All of these plans will be popular priced. Special plans for any kind of a boat up to and including 125 foot will be made to order.

New Ball Bearing Generator

The Comet Electric Company of Indianapolis, Indiana, are building high-grade ball-bearing lighting generators expressly for the motor-boat trade, which should find a good reception. B. E. Avey, in charge of production, is an experienced electrical man and has been affiliated with the magneto field since its inception. He has designed the Comet Set to give maximum efficiency with the minimum number of working parts. Various tests have been recently conducted on these generators and they are said to have developed power in excess of their rating.

How About Tools?

All motor boatmen are proud of their tool equipment. There are many tools which may be missing from their lockers which can be found fully described in the little Tool Book, Number 14 which has just been issued by the Goodell-Pratt Company, Greenfield, Mass. Over 2,000 sizes and kinds of tools are illustrated for the use of boat builders and householders. It is supplied to anyone interested in tools gratis on request.

Research Department for Bosch

Victor Greiff, E. E. who joined the American Bosch Magneto Corporation, of Springfield, Mass. a year ago for the purpose of installing and putting into operation a Research Laboratory for the study and development of electrical automotive equipment, has completed the work and returned to his home in New York City. As a result of Mr. Greiff's efforts, the company now has probably the most complete department for ignition research in the country.

The Engine Everybody Wanted

A well-known boatman saw the Michigan Marine Motor and after a demonstration said: "That's the engine I've been looking for for years. A four-cycle single-cylinder engine that don't weigh a ton, will start every time and stay running, either for trolling or full speed, with the possibility of repairs at any Ford garage. It's the ideal sportsman motor." He knew that we had hit the nail on the head, for the Michigan Motor is all of this and more.

Engineers have gone over this engine and have said no better material, design or workmanship could be used. The actual running tests have proven the reliability and smoothness of operation. The offset cylinder and balanced crank has made it possible to give the same steady effect as found in the four-cylinder engines. Full rated horsepower, perfect control and absolute reliability are the main features of the Michigan Motor.

(*Continued on page* 104)

DEVOE

Crossing Out the "?"

"HOW is this paint going to turn out?" is the question never asked by the man using Devoe Paint Products.

He knows in advance that its quality will not disappoint him; that it will not go against his previous experience; that it will not show variations or differences from its formula; that it will give complete and lasting satisfaction.

In paints, particularly, quality means *final economy*. You cannot do better for the beauty and protection of your boat than to specify and use Devoe Products. There is one to meet every marine need; on fresh or salt water; on tiny skiff or transatlantic liner.

These paints give you the advantage of 167 years' experience of the oldest paint manufacturing concern in the United States.

Manufactured by

Devoe & Raynolds Co., Inc.

New York *Paints, Varnishes, Stains, Enamels, Brushes, Insecticides* **Chicago**

DEVOE & RAYNOLDS CO. INC. THE FIRST AMERICAN PAINT MAKER FOUNDED 1754

Yard and Shop

(*Continued from page* 102)

An Efficient Gear

A surprising demand has developed for the heavy service reverse gear, which is being built by the McKinnon Iron Works Company, Ashtabula, Ohio. The mechanical efficiency of this gear is exceptionally high and the power lost in transmission exceptionally small. Tests made show that this gear is probably one of the most efficient built to-day, and for heavy boats of all types it is unequalled. It has the same speed ratio in forward and reverse positions which is of decided benefit.

Experience in Paint Making

One of the most essential ingredients in yacht paints is experience. The materials which enter into the manufacture of paints, particularly those intended for marine service, may be of the highest quality, but if the mixing is not properly understood the resulting product will be no better than if inferior materials are used. A paint which has 166 years of experience and skill back of it made by Devoe & Raynolds Company and can be trusted to withstand the wear and tear of service on boats and yachts.

Yacht Repair Yard

The harbor of Port Jefferson, Long Island, a famous rendezvous for yachts and motor vessels of many kinds has as part of its facilities a wonderful repair yard operated by the Port Jefferson Marine Railway Company. Yachts and vessels of any size up to 1,000 tons can be readily hauled out and outfitted. A small railway of 300 tons capacity will serve smaller yachts and any repairs or new construction can be quickly and efficiently carried out.

Notice to Aviators

The hydrographic office has been publishing a monthly bulletin for the particular benefit of aviators and others interested. Persons desiring these notices should address the Hydrographic Office, Navy Department, Washington, D. C. Any notes of interest to this service should be sent them.

A Useful Invention

An improvement in ignition devices is disclosed in the invention which has been called Shursparc. This device is built on an old principle well known to electrical engineers, and it is designed to eliminate all spark plug troubles experienced with the motor. It is easily installed and improves the efficiency of both battery and magneto systems. It insures easier and quicker starting and reduces carbon to a minimum. Better ignition is caused and a more economical mixture of gasoline can be used.

Measure Fuel Consumption

A novel meter by which the rate of fuel consumption may be continuously watched is the Econometer which, when properly installed, will show at a glance whether the fuel consumption today is greater than it was yesterday or whether the engine is suffering from a loss in efficiency. In a few minutes' time it is possible to tell whether adjustments or repairs have improved the engine or not. Carburetor adjustment can be made with a definite knowledge of saving effected. There is only one moving part in the indicator, which is constructed of acid-resisting material. The entire device is covered by patents.

This device can be very easily installed on any existing gasoline line and will measure continuously the number of gallons of gasoline being used per hour. It is manufactured in Chicago by the Republic Flow Meters Company, at 2240 Diversey Parkway, and was invented by Major R. W. Schroeder and first introduced in the United States Air Service on aeronautic motors.

For the Small Boat

Fitting the small boat with the proper power plant is now a common consideration among power and sail boat owners. For this purpose the Evinrude is a very efficient equipment.

Evinrude power is not intended for the big cruiser or yacht, but for the dinghy, or for an ordinary row boat.

With the detachable Evinrude the motor can be removed from the boat, stored away in some corner—out of the way—where it is ready to be used at any time.

The detachable Evinrude is a 2 h.p. motor, equipped with standard magneto, built-in-flywheel type and automatic reverse. The speed on an ordinary rowing craft is 7 to 8 miles an hour.

The inboard 2 h.p. Evinrude is also equipped with magneto and is a standard inboard type. It is installed permanently in the boat. The motor is very compact, thereby taking up very little space, yet powerful enough to drive a dinghy 7 or 8 miles an hour.

Those interested in Evinrudes are urged to write for the latest catalog and prices. Address, Evinrude Motor Company, Milwaukee, Wisconsin.

A Regular Bear Cat

One of the best all-round runabouts developed during the season of 1921 is undoubtedly the little 26-footer Belle Isle Bear Cat powered with a 4-cylinder Hall-Scott marine motor.

Unusual attention was directed to this craft through its phenomenal turning ability. E. M. Gregory, the owner, claims that she can turn on a thin dime, and all who have seen her perform are of the same opinion.

With an over-all length of only 26 ft., Bear Cat has the extremely liberal beam of 6 ft. 6 inches and has greater seating capacity than most 30-footers. The outstanding feature of the boat is the three-passenger forward cockpit which is equipped with steering wheel and all engine controls. Forward cockpits are not new, nor are they a novelty any more, but this one is so perfectly appointed, and balances so well with the rest of the boat, that it cannot but attract attention. Three persons may ride in this cockpit, yet the boat runs in perfect balance, as the pictures bear out, and they are entirely free from spray of any kind, the wide-flaring bows throwing the water down and away. There is an exhilaration that you fail to get in most boats, a pleasurable thrill that comes with the wild dash at speed in a really lively boat where comfort and speed are so pleasantly combined. Then, again, you are forward of the power plant that drives you so smoothly. You do not hear the roar of the exhaust, nor are you conscious of any unpleasant vibrations.

Of course to get these results it was necessary to install a powerful engine of light weight, and so Bear Cat is powered with a four-cylinder 125 h.p. Hall-Scott marine engine, which is neatly installed amidships under hinged hatches, forming an idealistic installation. So perfectly adapted is this engine to the hull, and so free from that vibration which is so objectionable in most four-cylinder engines, that several purchasers have remarked: Why a six when I can obtain all I want with a four?

The speed obtained is in excess of 33 miles an hour, and in official races at Detroit held with adverse conditions of wind and weather, Bear Cat maintained well over 31 miles an hour in a twenty-mile race.

In addition to her prowess as a speed boat Bear Cat is, as has been mentioned, a really remarkable sea boat, in fact it has to be unusually rough going before any spray comes aboard at all.

So remarkable has been the success of this boat that the Belle Isle Boat and Engine Co., of Detroit, Mich., the builders and designers, are putting them out as standardized models.

New Harrison Cruiser Model

The standardized 32-foot cruiser which is being built by the R. W. Harrison Boat Works at Toledo, Ohio, is being produced in a double cabin model. Comfortable sleeping accommodations for six persons, four on separate berths in the forward cabin the same as the single cabin cruiser and two additional permanent spring berths in the after cabin. The bridge deck is nearly seven feet long with a roomy engine compartment below and the same equipment will be used as on the model now being built.

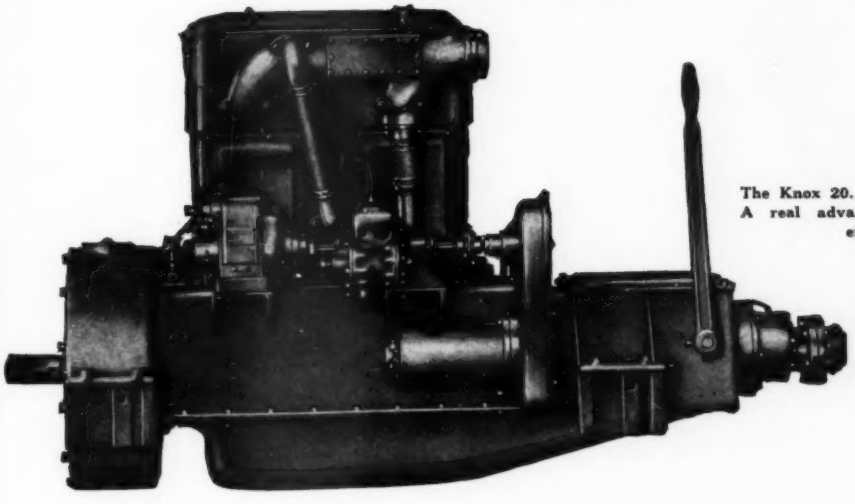
The Harrison cruisers are substantially built and of the V-bottom type. Heavy steam bent frames are used with cedar planking, copper riveted to frames. The power plant is a 40 horsepower Kermath motor and a speed of 12 miles per hour is easily attained. They will also run slow enough for trolling when desired.

Chicago Branch Moves

The Lunkenheimer Company, Chicago branch store has changed its address from 188 North Dearborn Street to 568 West Washington Boulevard. They will be ready at their new address to supply all manner of brass and bronze fittings for the use of the engineering trades as heretofore.

Knox
VALVE IN HEAD

"Steady Service"



The Knox 20. Bore 3½", Stroke 5". A real advance in marine motor engineering.

As Good As It Looks!

YOU can't criticize the clean-cut appearance of the new Knox Twenty. Every single moving part enclosed except a bit of the pump shaft. Every single accessory built in but arranged for ready accessibility, quick removal and simple adjustment. And underneath its handsome exterior you'll find this motor just as good as it looks.

In designing the Knox Twenty our engineers did not have any stock of old parts or old patterns to use up. They created a new engine, each part properly proportioned and adapted to every other part. They were free to employ the latest and most improved features of automotive design.

Several months of production have proved the merits of Knox Twenty construction. In service it has already demonstrated its quality. It is a perfected engine, the most advanced engine of its size offered to the boat owner to-day.

You'll enjoy reading the details of this engine—of its wonderful lubrication system, its remarkable valve design and other features. Let us send you the complete description. Write for it to-day.

KNOX MOTORS ASSOCIATES
SPRINGFIELD, MASSACHUSETTS, U. S. A.

Made in New England at Springfield, Mass., by Knox Motors Company, also manufacturers of Truck, Tractor, Passenger Car Engines and industrial power sets.

Motor Boating

A Motor Boat that will go any place you can row

Propeller located amidships is protected from striking submerged obstacles by patented skeg that raises it automatically into its housing.

This amidship position of propeller and skeg stabilizes the boat and keeps it on even keel—increases its speed and allows boat to be pulled up on beach or dock.

Hunt or fish without oarwork

Automatic Propeller Protection

Dependable Economical Safe

Universal Joint, Protecting Skeg

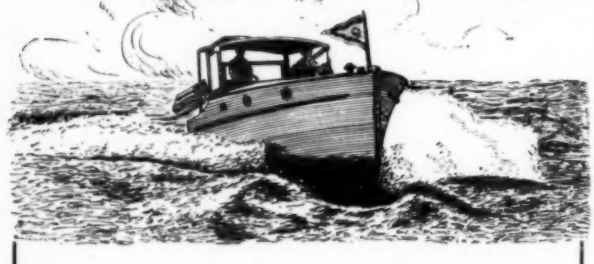
Powerful, simple motor (9-9½ m.p.h.). Maxim silenced. One lever speed control. Beautifully finished in "Natural Wood." Roomy. Seaworthy. 16½-18½ ft. (4½ ft. beam).

DISAPPEARING PROPELLER Motor Boats

3 models—Waterford $375, John Bull $425, Uncle Sam $475. Complete ready to run.
Beautifully illustrated book "VACATION DAYS," with complete specifications mailed free on request.

Disappearing Propeller Boat Companies
97 King St. W., Toronto, Can. 731 Main St., Buffalo, N. Y.
Territory Still Open for Distributors. Write—Wire

Satisfaction



in Motor Boating is insured by proper equipment. The little conveniences and improved appliances of the modern boat add to your satisfaction and pleasure and make a favorable impression on your guests.

A study of our revised Marine Catalogue No. 103A will give you many ideas for the up-to-date outfit of a new boat or the modernization of an old one.

Mailed free on application.

GEO·B·CARPENTER & CO.

MARINE SUPPLIES

200 W. Austin Avenue Chicago

Scripps Reliability Race

Fighting her way in the teeth of a gale which for a time attained a velocity of sixty miles an hour, Babo, the staunch little cruiser owned by Kent North, of the Cleveland Yacht Club, won the third long distance contest of the Cleveland Yacht Club for the Scripps Reliability Trophy. The contest took place on Saturday, July 30th, over a course of one hundred and twelve miles between Rocky River and Put-In-Bay. Of the twenty boats which started, eighteen finished.

Babo, the winner, is a 45 footer with 11 ft. 6 ins. beam, and is powered with a four-cylinder Buffalo engine, with 6¼-in. bore and 6¾-in. stroke. Her elapsed time for the full distance was 11:23:30.

Namil, Jack Farr's new Hacker-designed 40 footer, finished second, and also made the fastest time. She was built by the Gidley Boat Co., of Penetang, Ont., and is powered with a 40 H. P. Kermath engine.

This annual contest of the Cleveland Yacht Club is an outgrowth of the old Scripps Reliability Cruise, for which Commodore William E. Scripps, of Detroit, donated a beautiful trophy several years ago. Its object is to supply a test of reliability more than of speed, and the trophy is awarded to the boat showing the best seaworthy qualities combined with engine staunchness and good seamanship on the part of the skipper and crew.

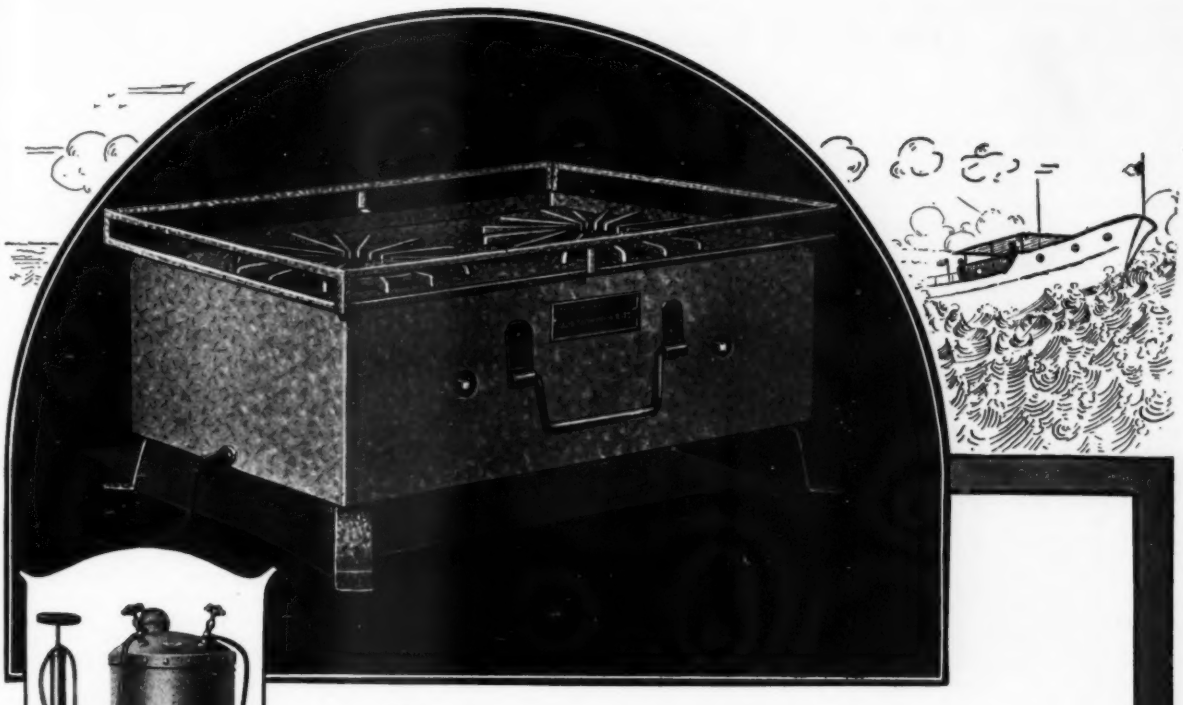
Babo was piloted by her owner, Kent North, and it is the first time the trophy has been won by the Cleveland Yacht Club. It was a hard-fought race all of the way. Babo started at 6:46:33 o'clock in the evening with twelve boats ahead of her. They ranged all the way from the little 27 footer Vivace, powered with a 12 h. p. engine, to boats of large size and heavily powered. It was hard sailing for a good part of the way, for at about 11:00 o'clock when the limit boats were nearing Kelly's Island, a terrific storm broke, accompanied by hail, lightning, thunder and rain. Part of the time the wind was blowing sixty miles an hour and the scratch boats were well out in the open and had to face the full force of it, but the little fleet of sea-going motor boats never faltered for a moment, although the crews were wet to their skins and confronted with all kinds of difficulties in keeping the boats on the course. June, one of the contenders, was forced to put in at Marble Head, owing to a clogged up gasoline feed pipe. The squall spent its force in about forty minutes and by the time the boats were approaching South Bass Light, conditions had improved, and for the latter part of the cruise they had comparatively smooth sailing.

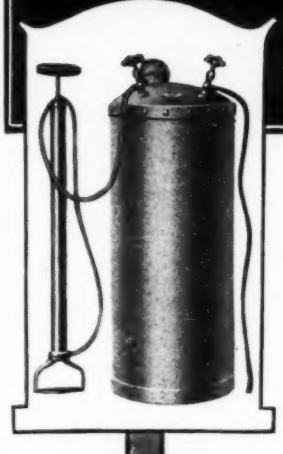
Cigarette was the first boat in at Put-In-Bay, having gained twelve minutes on Tobermory, which had left Rock River two minutes behind her and finished second. Babo came along next, having passed ten boats on the run. Namid reported in eleventh position. After the boats had cleared Put-In-Bay Island, the pilots found the wind was shifting to almost northwest, and it had kicked up a lively sea, with the result that the following sea, backed by a freshening wind of about twenty-five miles velocity, was just enough off the port quarter to make steering difficult. At daybreak Cigarette was still leading, but Babo had worked up into second place and was gaining steadily. Soon she headed the fleet. Pirate's skipper showed a fine piece of sportsmanship when he sacrificed a better position at the finish in order to pick up Tobermory, who had become disabled because of carbureter trouble. A dash of excitement was added to the event when Harmony, the scratch boat, became unmanageable at the mouth of Rocky River and for a time was in danger of being wrecked on the cliffs, but fortunately, her crew were able to regain control and prevent disaster. Emergency repairs were made and she was able to finish safely. Her unhappy plight was due to the fact that the tiller line snapped when she was in the worst part of the channel and only a large pipe wrench applied to the rudder stock saved her from disaster. Queen Bee was also reported among the missing at the finish and there was considerable anxiety on her behalf until word was received that she had encountered trouble with her reverse gear and had put into Put-In-Bay for repairs.

Commodore Chairs Are Popular

The demand for the folding Commodore Chair, the manufacture of which has just been begun by the Albany Boat Corporation, has exceeded all expectations. This chair, which folds up into a very compact unit, was only announced recently and the flood of orders which followed completely swamped the facilities available. Increased space in the factory has enabled them to overtake the demand and deliveries are now being promptly made. The possibilities of this chair are unlimited. Its use is not confined to boats alone. It will make a serviceable article of furniture for country clubs, summer hotels, boarding houses, and the individual porch.

Advertising Index will be found on page 110





Announcing

GALLEY-KOOK KIT

TRADE Auto MARK

FOLLOWING the unusual success of the Auto-Kamp-Kook-Kit as a galley stove, requests were received from several boat owners and manufacturers that we produce a galley stove especially designed for fresh and salt water use.

Several men, prominent in the boat building business, were called into conference for their ideas, and the result was the GALLEY-KOOK-KIT, perfect in every detail, embodying all the features of the justly famous Auto-Kamp-Kook-Kit, but adapted to the requirements of fresh and salt water craft.

Auto-Galley-Kook-Kit measures 20¼" x 10½" x 5⅛"; legs are 2" high; body made of heavy galvanized iron strongly riveted; all fittings are galvanized or of copper or brass; gasoline tank is separate from stove—furnished with 15 feet of flexible copper tubing so tank can be mounted outside galley if desired. Tank is of heavy galvanized iron, riveted and soldered inside; brass and copper fittings; capacity 3 gallons. Pump is polished brass, 1¼" x 20".

Burns motor gasoline—same as you use in your engine—gives a steady hot blue flame that a thirty mile wind will not blow out.

Price complete with tank and pump—$35.00

Specify Auto-Galley-Kook-Kit on your new boat. Write for details and complete description.

Gar Wood says:

"Your stove is giving perfect satisfaction and is the best I ever used. Will use one on my new cruiser Gar Junior III now building".

*

NOTE:

Auto-Galley-Kook-Kit can be finished in rich black or dark brown enamel over galvanized iron if desired.

SPECIAL stoves made to order with any number of burners. Send a blue print of your galley and we will gladly submit an estimate.

*

Made by the makers of the famous

KAMP Auto KOOK KITS

PRENTISS-WABERS STOVE CO.

108 Spring Street Wisconsin Rapids, Wisconsin

Gar Jr. II Explores Uncharted Waters

(*Continued from page 21*)

us, especially the storekeeper, for this being the first store we had seen for several days gave us an opportunity to replenish our larder. On from Coldwell to Jackfish and from the September issue of MoToR BoatinG you will realize how we had our first thrill in getting gasoline. Jackfish on to Rossport and then more gasoline. Jackfish and Rossport were considerably larger than any of the other places we had visited and people more in touch with the world, even issues of MoToR BoatinG had penetrated up there and many already knew of the Gar Jr. and her famous cruise up from Miami.

From Rossport to Nipigon, 40 miles, was a delightful sail, passing in and out around countless numbers of small but high islands until you reached the lower part of the Nipigon River and just as the sun was setting, bringing us to the town of Nipigon, which is so rich in old Indian traditions. There were many old Ojibway Indian families living there now, the men spending their time as guides to fishing parties up the far-famed Nipigon River. In fact, all are still talking of the recent visit of the Prince of Wales to their town and his holiday spent up the river, camping and fishing, as "our fête boys." With many regrets we left Nipigon, for we felt there was so much to see and live up that river that we hadn't time for, but I for one have pledged myself a return trip to leave nothing unfinished that goes with the beauty and life of the place. We met such delightful people in Nipigon who made us feel the place was well worth coming back to. From Nipigon, passing out through the straits beyond St. Ignace and many more single islands, we headed for Port Arthur, 92 miles, and spent half a day there. Port Arthur is a fairly large modern city, and everything we needed could be procured, but that which we needed most—"the wilds," the cedars, the birches, and the evergreens, so we steered our course toward Isle Royal, a masterpiece in the Great Sea, Lake Superior. Civilization had invaded there in the last ten years and we had to accept it gracefully, especially when we found so many were old friends of Commodore and Mrs. Wood, who had ran away from the city of Duluth to enjoy a quiet summer among the pines. The next morning we planned a party for a short sail on the Gar Jr. and all who went could not sing their praises loud enough. We left our friends at Tobins harbor, as that was the post office name given their part of the island and we started away for Grand Marais, 107 miles, another town of some little size with a court house, district school, village store and honest-to-goodness electric lights. The Woods were on their old cruising grounds again, consequently, that meant old friends and an evening ashore with "Mayor" and Mrs. Charlie Anderson in their most charming home. Mr. Anderson knows the woods (forests) and so does Commodore Wood, so I sat there wild-eyed and eager to hear the tales of hunting moose, caribou, bears, and trapping the minx, beaver and wolves all in that vicinity and again pledging myself another trip up to Grand Marais to enjoy winter sports, so to speak.

From Grand Marais on I didn't seem to feel as joyful as I had. I began to realize what we were leaving behind us, and to me it meant so much more than cities and people. I just wanted a little more of it and then I know I could have come back a bit more contented; however, I know we can't play always and we can try to make an effort to repeat this. The shore line from Grand Marais to Duluth is very interesting, not so high, but solid rocks, with many caves and caverns where I wished I could make myself a child again to play in and out of them.

I will say Duluth was glad to see us. Everything was done for us, old acquaintances and friends received, banquets and motoring trips planned, and Commodore and Mrs. Wood, in their most hospitable way, entertained many on board the Gar Jr. for short spins out into the lake. The best of friends must part and we had to leave Duluth, for there was a race meet in Chicago which called us there and that meant making tracks. We sailed to Bayfield, 77 miles, now touching Wisconsin, and stayed there but a few hours and then went on to more interesting scenery, the Apostle Islands, and found an old camping ground of Commodore Wood, Stockton Island, to spend the night.

The next day proved a very interesting trip through the Portage Canal, making a stop for gasoline at Hancock. Then onto the Huron Islands where we paid the lighthouse keeper a visit and were most hospitably entertained, making the climb up the lighthouse and saw the many glacier-marked rocks. Then on Lake Superior again and back to Woods Haven, 338 miles run, our first camping spot as we entered Lake Superior and so much now to be sunken away in our memories. The next morning brought us back to the Soo and most of the day spent there, but not so much but what we could make our way into Lake Michigan or beyond Mackinaw Island, 151 miles to Charlevoix, a most peaceful little harbor. From Charlevoix we sailed direct to Milwaukee, 217 miles past the sand dunes on the Michigan shores, the precipitous cliffs and the pine lumber woods, all most interesting and vastly different from the stern and rock-rimmed shores of northern Superior. We anchored off the Milwaukee Yacht Club and were surprised and shocked beyond words at the first sign of inhospitality we had received on all our many miles of the cruise. They could give us no anchorage, could take no telegrams for us, were much too busy owing to preparations for an inter-lake sailing regatta. Our feelings downed, but not our spirits, we got in touch with our good friend Mr. Moorehead, President of the Great Lakes Boat Building Corp., and things began to hum. Milwaukee was ours, and we left having a much better impression of the city and its people than our first half hour proved to be. Only 90 miles more to Chicago and then we had made a 2,060-mile cruise well worth anyone's time and experience. With several guests aboard we left Milwaukee, followed the shore line, passed Racine, Waukegan, into the all-hustling busy city of Chicago, its harbor fairly alive with all kinds of craft to take part in the Pageant of Progress planned by the city.

A True Story of A Standardized Boat

If you will permit your mind to run backward for a short space, you will at once realize that most of the successful products of American manufacture have been built in the belief that no business transaction is a good business transaction unless the deal involves profit to both buyer and seller.

'Way back in 1896, W. H. Mullins, of Salem, Ohio, built of light gauge steel, a hunting boat for his own use. It was neither a skiff, fishing boat nor rowboat, but just what it was intended to be—a hunting boat. It answered the purpose so well that it was not long after that Mr. Mullins began building boats for his personal friends. This was the beginning of Mullins Standardized Boats.

This year marks the advent of the Mullins Steel Boat with the V bottom, a type of construction that gives greater speed and comfort with a drier free-board. Wherever Mullins V-Bottom Boats have gone into service, they have met with the same enthusiastic welcome that has heretofore been accorded all Mullins' products.

Everyone connected with the building of Mullins Boats, from the naval architect down to the man who launches the completed product for final test, has striven to do his particular part of the work in such a manner that it could always be truthfully said that every time a Mullins boat goes from producer to user, the gain is mutual.

That is one reason why when stock or standardized boats are mentioned, almost invariably the next word is Mullins.

Nearly 100,000 Mullins boats have gone into service during the past 25 years. You will find them on the irrigation canals of Texas, on the inland lakes of Wisconsin and Minnesota; you will find them among the Florida Keys, around Coney Island and off Sandy Hook.

You will find the boat of your dreams in the Mullins catalogue, which contains forty models of boats, built of wood or steel, of almost any length, beam and speed, all ready for use.

THE FAY & BOWEN LINE

Model L-40

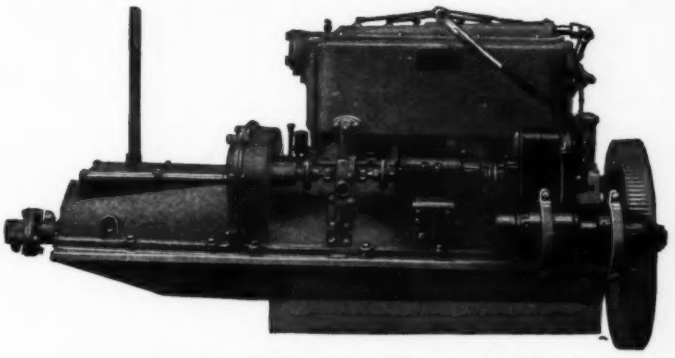
Four cylinders, 3¼ x 4½, 800 to 1400 R.P.M., 10 to 17 H.P.

Weight 450 Lbs.

Model L-41

Four cylinders, 3½ x 5, 600 to 1200 R.P.M., 10 to 22 H.P.

Weight 525 Lbs.



Fay & Bowen Model LN-42 four cylinder 4¼ x 5½ with electric starter

Model LN-42

Four cylinders, 4¼ x 5½, 800 to 1400 R.P.M., 25 to 40 H.P.

Weight, iron base, 900 Lbs.
Weight, aluminum base, 700 Lbs.

Model LN-43

Four cylinders, 4¾ x 5½, 600 to 1000 R.P.M., 25 to 40 H.P.

Weight 950 Lbs.

Model L-44

Four cylinders, 5 x 6¼, 600 to 1000 R.P.M., 30 to 45 H.P.

Weight 1095 Lbs.

Model L-63

Six cylinders, 4½ x 5½, 600 to 1000 R.P.M., 30 to 50 H.P.

Weight 900 Lbs.

Model L-64

Six cylinders, 5 x 6¼, 600 to 1200 R.P.M., 45 to 85 H.P.

Weight 1480 Lbs.

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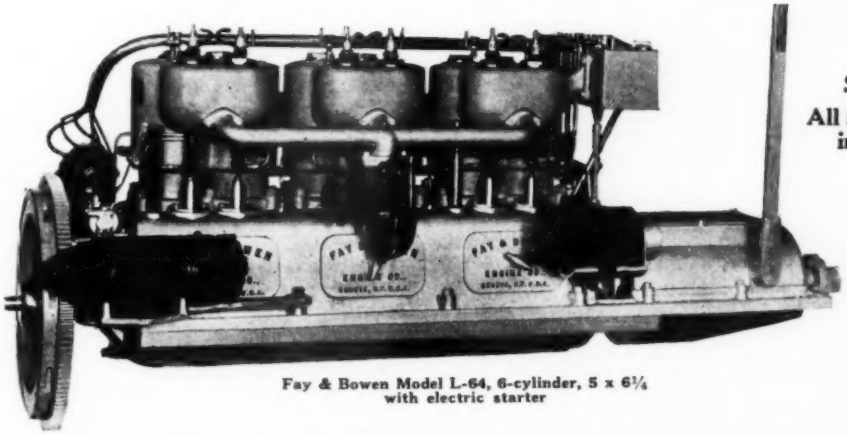

Fay & Bowen Model L-64, 6-cylinder, 5 x 6¼ with electric starter

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Southern Trade:—

All sizes in stock ready for immediate shipment.

NONE BETTER BUILT

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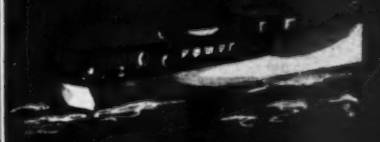

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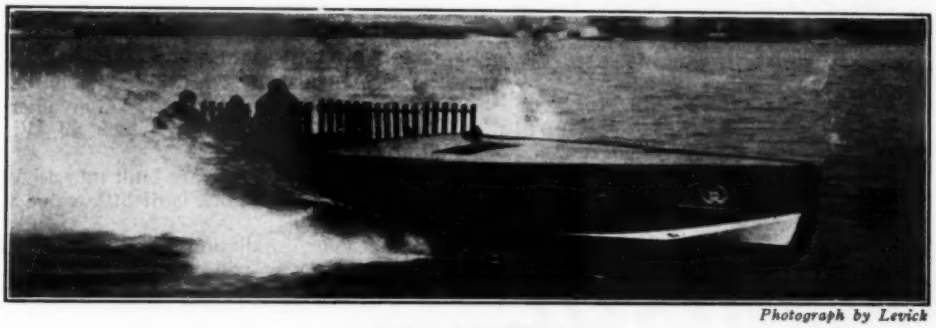

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MISS AMERICA II

Designed and built by C. C. Smith Boat & Engine Co., Algonac, Michigan, and equipped with Smith Twin Six Motors. Owned and driven by Garfield A. Wood of Detroit, with Jay Smith of Algonac as mechanic.

This record-breaking hydroplane won the Harmsworth Trophy and also set a new mark of 81 miles per hour in A. P. B. A. mile trials, easily establishing the fact that she is the

FASTEST BOAT IN THE WORLD

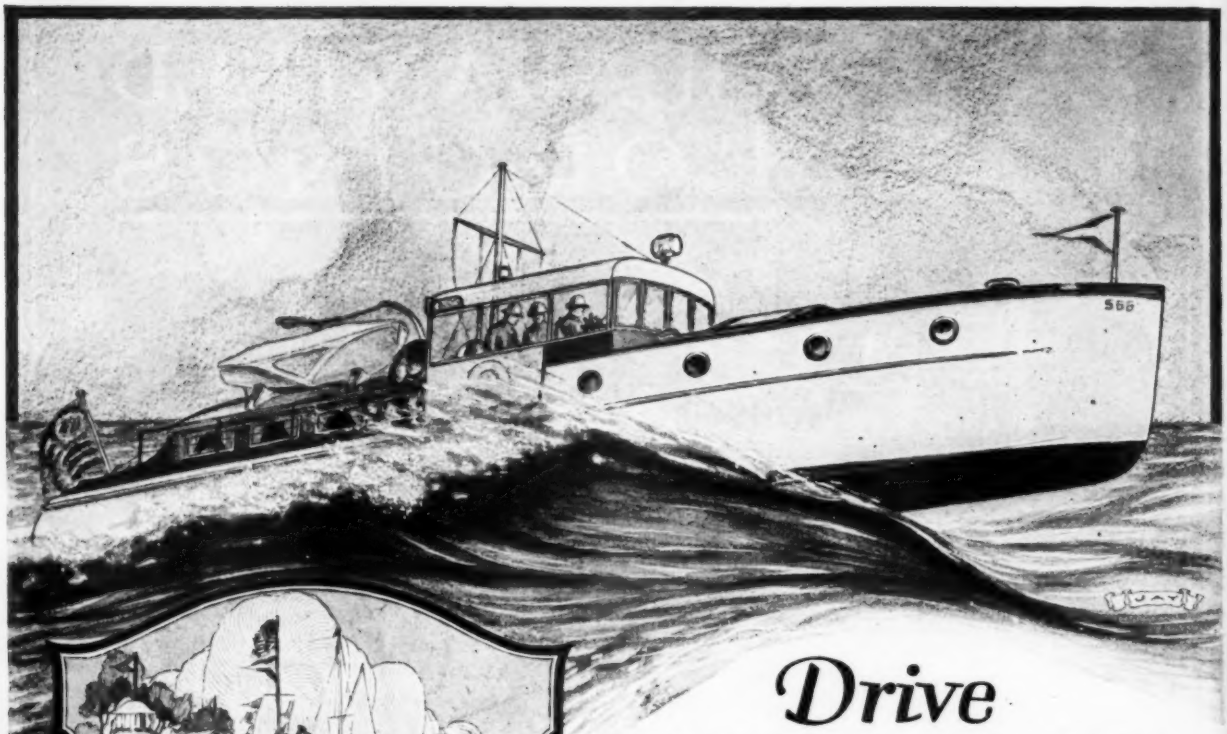
In accomplishing these results "MISS AMERICA II" used a pair of

HYDE TURBINE TYPE PROPELLERS

thus adding another to the long list of Hyde-equipped record-breakers and furnishing further proof of Hyde efficiency.

Write for our booklet, "Propeller Efficiency." It contains valuable information. We will be pleased to mail a copy upon request.

HYDE WINDLASS COMPANY **BATH, MAINE**



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IN the crucial moments, when the last ounce of power is necessary, and perhaps vital—it is then that Wisconsin Marine Motors drive through.

. . . the cruiser, taking the breakers head-on, with her consistent Wisconsin driving through, can be depended on to reach port in safety.

. . . the runabout, with that extra bit of power to drive her through to a win, will give her owner the pride and satisfaction which all Wisconsin Motors give.

Power and consistency are built into all Wisconsin Marine Motors; one is of little value without the other.

See that your installation is a Wisconsin—and its consistent power will always drive your boat through.

Wisconsin

CONSISTENT

Marine Motors

Built in the following sizes:

EM—4 x 5	4	cylinder
AM—4¼ x 5½	4	"
MM—5¾ x 7	4	"
GM—4¼ x 5½	6	"
PM—5¾ x 7	6	"

Wisconsin Motor Mfg. Co.

Milwaukee **Wisconsin**

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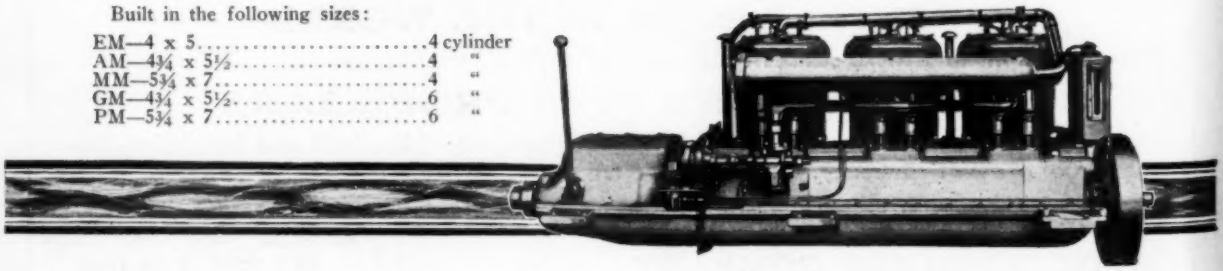

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